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—OF THE—

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—FOR—

1886-87.

ANN ARBOR :
PUBLISHED BY THE UNIVERSITY,
1887.

CALENDAR

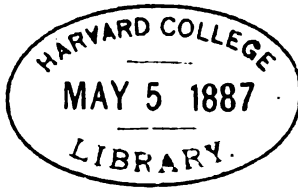
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ANNOUNCEMENTS FOR 1887-88.

1887.

January	4.	University Exercises resumed after Holiday Vacation.
February	18.	(Evening.) FIRST SEMESTER CLOSES.
February	21.	SECOND SEMESTER BEGINS.
March	25.	(Evening.) Recess begins, ending April 4, (evening).
June	17, 18.	<i>Examination for Admission to the School of Pharmacy.</i>
June	25, 27.	<i>Examination of Candidates for Admission to the Department of Literature, Science, and the Arts.</i>
June	26.	<i>Baccalaureate Address</i>
June	28.	<i>Class Day.</i>
June	29.	<i>Alumni Day.</i>
June	30.	COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY. Summer Vacation begins.
September	26-30.	<i>Examination of Candidates for Admission to the Department of Literature, Science, and the Arts.</i>
September	23, 29.	<i>Examination for Admission to the Department of Medicine and Surgery.</i>
September	29, 30.	<i>Examination for Admission to the Department of Law, the School of Pharmacy, and the Homœopathic Medical College.</i>
September	30.	<i>Examination for Admission to the College of Dental Surgery.</i>
October	1.	FIRST SEMESTER BEGINS IN ALL DEPARTMENTS OF THE UNIVERSITY.
November	—.	Thanksgiving Recess of three days, beginning Tuesday evening, in all Departments of the University.
December	23.	(Evening.) Holiday Vacation begins for all Departments.

1888.

January	10	Exercises resumed.
February	17.	(Evening.) FIRST SEMESTER CLOSES.
February	20.	SECOND SEMESTER BEGINS.
March	23.	(Evening.) Recess begins, ending April 2, (evening).
June	28.	COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY.

1887.														1888.													
JANUARY.							JULY.							JANUARY.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
2	3	4	5	6	7	8	3	4	5	6	7	8	1	2	1	2	3	4	5	6	7						
9	10	11	12	13	14	15	10	11	12	13	14	15	16	17	8	9	10	11	12	13	14						
16	17	18	19	20	21	22	17	18	19	20	21	22	23	24	15	16	17	18	19	20	21						
23	24	25	26	27	28	29	24	25	26	27	28	29	30	31	22	23	24	25	26	27	28						
30	31	..	..	..	..	..	31	..	..	..	..	..	..	..	29	30	31	..	..	..	..		
FEBRUARY.							AUGUST.							FEBRUARY.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
6	7	1	2	3	4	5	7	1	2	3	4	5	6	..	..	1	2	3	4	5					
13	14	8	9	10	11	12	14	7	8	9	10	11	12	13	12	13	14	15	16	17	18						
20	21	15	16	17	18	19	21	16	17	18	19	20	21	22	19	20	21	22	23	24	25						
27	28	22	23	24	25	26	28	23	24	25	26	27	28	29	26	27	28	29						
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MARCH.							SEPTEMBER.							MARCH.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
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13	14	8	9	10	11	12	19	11	12	13	14	15	16	17	8	9	10	11	12	13	14						
20	21	15	16	17	18	19	26	18	19	20	21	22	23	24	15	16	17	18	19	20	21						
27	28	22	23	24	25	26	..	25	26	27	28	29	30	..	22	23	24	25	26	27	28						
..						
APRIL.							OCTOBER.							APRIL.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
8	4	5	6	7	1	2	5	2	3	4	5	6	7	8	1	2	3	4	5	6	7						
10	11	12	13	14	15	16	9	10	11	12	13	14	15	16	8	9	10	11	12	13	14						
17	18	19	20	21	22	23	16	17	18	19	20	21	22	23	15	16	17	18	19	20	21						
24	25	26	27	28	29	30	23	24	25	26	27	28	29	30	22	23	24	25	26	27	28						
..	..	..	..	..	..	..	30	31	..	..	..	..	..	..	..	..	..	..	..	..	..
MAY.							NOVEMBER.							MAY.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
1	2	3	4	5	6	7	6	7	8	9	10	11	12	6	1	2	3	4	5	6	7						
8	9	10	11	12	13	14	13	14	15	16	17	18	19	13	8	9	10	11	12	13	14						
15	16	17	18	19	20	21	20	21	22	23	24	25	26	20	15	16	17	18	19	20	21						
22	23	24	25	26	27	28	27	28	29	30	..	..	..	27	22	23	24	25	26	27	28			
29	30	31	..	..	..	..	..	..	..	..	..	..	..	..	29	30	31	..	..	..	..		
..						
JUNE.							DECEMBER.							JUNE.													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S							
5	6	7	8	9	10	11	4	5	6	7	8	9	10	8	4	5	6	7	8	9	10						
12	13	14	15	16	17	18	11	12	13	14	15	16	17	10	11	12	13	14	15	16	17						
19	20	21	22	23	24	25	18	19	20	21	22	23	24	17	18	19	20	21	22	23	24						
26	27	28	29	30	25	26	27	28	29	30	31	24	25	26	27	28	29	30	31						
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BOARD OF REGENTS.

JAMES B. ANGELL, LL. D.,
PRESIDENT.

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HON. JAMES SHEARER,	<i>Bay City,</i>	Dec. 31, 1887
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HON. MOSES W. FIELD,	<i>Detroit,</i>	" 1893
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*In place of Hon. James F. Joy, resigned.

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Professor of Pathology and the Practice of Medicine, and Clinical Medicine, and Dean of
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EDWARD OLNEY, LL. D.,

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Professor of the Greek Language and Literature,

Washtenaw Avenue.

CHARLES E. GREENE, A. M., C. E.,

Professor of Civil Engineering,

37 William Street.

* The names of the Members of the Faculties (except the name of the President) are arranged in the following divisions: Professors, (including Librarian), Assistant Professors, Instructors, and Assistants, each name being placed in its appropriate division according to length of continuous service in the present rank.

† Absent on leave for the year as Director of the American School of Classical Studies at Athens.

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72 Lafayette Avenue, Detroit.

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* Absent on leave from January 1, 1887.

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* From January 1, 1887, to end of year.

† Absent on leave.

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UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

The University of Michigan is a part of the public educational system of the State. The governing body of the Institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the constitution of the State. In accordance with the law of the State, the University aims to complete and crown the work that is begun in the public schools, by furnishing ample facilities for liberal education in Literature, Science, and the Arts, and for thorough professional study of Medicine, Pharmacy, Law, and Dentistry. Through the aid that has been received from the United States and from the State it is enabled to offer its privileges, without charge for tuition, to all persons, of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the Institution to all students, wherever their homes. It is in this broad, generous, and hospitable spirit, that the University has been founded, and that it endeavors to do its work.

ORGANIZATION OF THE UNIVERSITY.

The University comprises the Department of Literature, Science, and the Arts (including the School of Political Science), the Department of Medicine and Surgery, the Department of Law, the School of Pharmacy, the Homœopathic Medical College, and the College of Dental Surgery. Each of these Departments and Colleges has its Faculty of Instruction, who are charged with the special management of it. The University Senate is composed of all the Faculties, and considers questions of common interest and importance to them all.

In the Department of Literature, Science, and the Arts, different lines of study lead to the attainment of the degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science,

Bachelor of Letters, the corresponding Masters' degrees, the degrees of Doctor of Philosophy, Doctor of Science, and Doctor of Letters, and the degrees of Civil Engineer, Mechanical Engineer, and Mining Engineer. When the same degree is given for different lines of study, this fact is indicated in the diploma. Students that do not wish to become candidates for a degree may, if they are prepared to enter the University, pursue selected studies for such a time, not less than one semester, as they may choose.

In the Professional Schools the instruction is given largely by lectures. Degrees are given to graduates as follows: In the Department of Medicine and Surgery, the degree of Doctor of Medicine; in the Department of Law, the degree of Bachelor of Laws; in the School of Pharmacy, the degrees of Pharmaceutical Chemist and Master of Pharmacy; in the Homœopathic Medical College, the degree of Doctor of Medicine; in the College of Dental Surgery, the degree of Doctor of Dental Surgery.

Students in any Departments of the University may enter the classes in any other, upon obtaining permission from the Faculties of the respective Departments.

THE LIBRARIES.

The Libraries of the University are the General Library, the Medical Library, the Law Library, and the Library of the Dental College. They contain in the aggregate 60,201 volumes, 12,267 unbound pamphlets, and 212 charts.

The GENERAL LIBRARY has occupied since 1883 the large fire-proof building built for its accommodation by the State. It contained Sept. 30, 1886, including the special collections known as the Parsons Library, the McMillan Shakespeare Library, the Library of the School of Political Science, and the German-American Goethe Library, 47,187 volumes, 11,404 unbound pamphlets, and 212 charts.

The Parsons Library was collected by Professor C. H. Rau, of Heidelberg University. At his death it was offered for sale, and was bought and presented to the University in 1871 by the Hon. Philo Parsons, of Detroit. It contains, with recent additions made by Mr. Parsons, 4,325 volumes and 5,000 pamphlets. It is especially rich in European works on the science of government, statistics, and political economy.

The nucleus of the McMillan Shakespeare Library was the valuable Shakespearian collection of 750 volumes made by Col. E. H. Thomson, of Flint. This was bought and presented to the University in 1882, by James McMillan, Esq., of Detroit, who at the same time provided the means for making additions to it. By a careful use of the means thus provided the collection has been increased to 3,000 volumes of text, criticism, and Shakespeariana. Among other purchases were 425 volumes and pamphlets from the well known Shakespearian Library of Mr. Joseph Crosby, of Zanesville, Ohio.

The Library of the School of Political Science, purchased with means provided in 1882 by a friend of the University, is practically a collection of great serial publications, of which there may be named, for the purpose of illustration, the Calendar of State Papers of Great Britain, Petitot's *Collection Complète des Mémoires relatifs à l'Histoire de France*, and the *Preussische Jahrbuch*. It contains at present 2,600 volumes.

The German-American Goethe Library has been founded and will be augmented from funds contributed for the purpose by a large number of persons in Michigan and other States. The donors are chiefly, though not exclusively, Germans. A portion of the money raised will be expended immediately in the purchase of editions of Goethe, and *Ana*; the remainder will be invested and the income only used. The number of volumes bought thus far, is 411.

Through the liberality of a recent graduate the Library has just acquired the Piranesi Collection of Engravings, consisting of 27 volumes in elephant folio of very interesting and valuable etchings, chiefly architectural.

The catalogue of the Library is the usual card catalogue of authors and subjects. The contents of the periodicals taken, as well as other matter, appear on the subjective cards. The whole work is kept carefully up to date.

One hundred American and European periodicals are taken.

Members of the Faculties and other officers of the University may draw books from the Library, subject to certain restrictions. To all other persons it is a reference Library. The Reading Room for general use in the new building will seat 210 readers. Rooms for advanced students are provided on the second floor, where work is pursued with the necessary books at hand.

The MEDICAL LIBRARY, containing 3,360 volumes and 872 unbound pamphlets, is shelved with the General Library, and is consulted under the same regulations. Forty-four medical journals are regularly received.

The **LAW LIBRARY** now occupies the large room on the first floor of the **LAW BUILDING**. In 1885 it was doubled in extent by the generosity of **Christian H. Buhl, Esq.**, of Detroit, who presented to the University a large collection of law books in his possession. The Library now contains 9,250 volumes.

The **LIBRARY OF THE DENTAL COLLEGE** is shelved in a room of the Dental building. It contains several sets of valuable periodicals and many of the most important treatises on dentistry. It contains 404 volumes.

The two Literary Societies in the Department of Literature, Science, and the Arts, have also good libraries.

The Christian Association connected with the University has a well selected library of moral and religious works.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is known as the **Detroit Observatory**, having been founded through the liberality of citizens of Detroit. Valuable additions and improvements have been made by means of further contributions from the same source, and from the city of Ann Arbor, and also by appropriations made by the Board of Regents. The building consists of a main part, with a movable dome, and two wings. The east wing contains the large meridian circle presented by **Mr. Henry N. Walker**, of Detroit. It was constructed by **Pistor & Martins**, of Berlin, and is one of the largest and best of the kind. The same wing contains a sidereal clock, made by **Tiede**, of Berlin, and the collimators for the meridian circle. The west wing contains the library of the Observatory, and the smaller instruments, and connects with the residence of the Director. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late **Henry Fitz**, of New York.

A small Observatory for the purpose of instruction has been erected on the Observatory grounds, near the main building. It contains an equatorial telescope of six inches aperture, and a transit instrument of three inches aperture, with zenith telescope attachment. A building near by contains computing rooms and rooms for observers, and a work-shop where necessary repairs and attachments for the instruments can be made.

A set of self-registering meteorological instruments, consisting of Hough's barograph and thermograph, and an anemograph, is a part of the outfit.

THE MUSEUMS.

The collections in the University Museums illustrative of Natural History, Industrial Arts, Archæology, Ethnology, the Fine Arts, History, Anatomy, and Materia Medica, are constantly increasing. The Museums are in charge of Curators as follows: The Museum of Fine Arts and History, Prof. Frieze; the collections in Zoölogy, Archæology, and Ethnology, Prof. Steere; the collections in Mineralogy, Prof. Pettee; the collections in Geology, Prof. Winchell; the collections in Botany, Prof. Spalding; the Museum of Applied Chemistry, Prof. Prescott; the Museum of the Department of Medicine and Surgery, Dr. Hendricks; the Homœopathic Medical Museum, Dr. Obetz; the Dental Museum, Dr. Dorrance.

The collections are arranged in such a way as to render them accessible both to students and to visitors. The University affords a secure depository for objects of value and curiosity, and it is therefore hoped that frequent gifts will be made to its several Museums.

The new Museum building now contains the collections in Mineralogy, Geology, Zoölogy, Industrial Arts, Archæology, and Ethnology. The collections of works of Art, including historical medallions and coins, are in the new Art Gallery.

The following description will indicate the character of the several collections belonging to the University.

I. NATURAL HISTORY.

I. The MINERALOGICAL COLLECTION comprises about 6,000 specimens. It embraces about 2,500 specimens (principally European) purchased of the late Baron LEDERER, and known as the LEDERER COLLECTION; and, besides others, a rich collection of the MINERAL SPECIES OF MICHIGAN, including all varieties of copper ore and associated minerals from the different localities of the Lake Superior mining district.

II. The GEOLOGICAL COLLECTION consists of:

1. The large and complete series of lithological and palæontological specimens, brought together by the State Geological Surveys, of which over a hundred fossil species have already become the types of original description.

2. The **WHITE COLLECTION**, consisting of 1,018 distinct entries, 6,000 specimens.

3. The **ROMINGER COLLECTION**, embracing about 2,500 entries, 6,000 specimens, mostly from the mesozoic formations of central Europe. This collection embraces about 500 specimens of mesozoic ammonites.

4. **SMITHSONIAN DEPOSITS**, consisting, for the present, of a collection of specimens of foreign and domestic building stones, and twenty-three specimens of fossils from the Upper Missouri.

5. **MISCELLANEOUS DONATIONS, COLLECTIONS, AND PURCHASES**, including a series illustrative of the metalliferous regions of the Upper Peninsula, collected by Professor Winchell, and an interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, presented by the late General Custer, U. S. A.

6. The **ROMINGER DEPOSIT**, which has more than doubled the value of the geological illustrations available for study and investigation. It embraces (1) the types of all Dr. Rominger's original descriptions of palæozoic corals as contained in the Geological Report of Michigan, volume iii.—not alone the specimens figured, but numerous specimens of each species, which are not duplicates but illustrations of different characters and varieties; (2) an enormous collection of *Stromatoporoids*—probably the largest and finest in the world; (3) a similar collection of *Bryozoa*; (4) palæozoic fossils belonging to all the other classes; (5) European fossils of all classes and ages in large number—the sponges forming, with the American species, a collection of extraordinary interest. All these specimens exist in a state of beautiful and very unusual perfection. It is impossible at present to form numerical estimates of the magnitude of the collection, but a special statement will be made out as early as practicable.

The entire Geological Cabinet is estimated to contain, aside from the Rominger Deposit, about 14,000 distinct entries, 41,000 specimens.

III. The **ZOOLOGICAL COLLECTIONS** are very large, comprising about 110,000 specimens under about 23,250 entries. There is a full series illustrative of the fauna of Michigan and other northern and western States. The animals of the Pacific coast are well represented in the collection made by Lieutenant Trowbridge, and large additions from foreign countries have been made through the medium of the Smithsonian Institution.

The **BEAL-STEERE ZOOLOGICAL COLLECTION**, made by Professor Steere in the years 1870-76, comprises about 25,000 insects, 1,500 shells, 8,000 birds, and numerous representatives of other groups; total, about 10,000 entries, 60,000 specimens.

IV. The **BOTANICAL COLLECTION** contains, in addition to Michigan plants collected by the public surveys, several valuable herbaria and sets

of plants that have been presented to the University from time to time. Among these, some of the most important are the HOUGHTON HERBARIUM, the SAGER HERBARIUM, the AMES HERBARIUM, the HARRINGTON COLLECTION, the BEAL-STEERE BOTANICAL COLLECTION, the ADAMS-JEWETT COLLECTION, and the GARRIGUES COLLECTION, all of which have been described in Calendars of previous years.

Among the more recent acquisitions are a set of native woods of the United States, collected and presented to the University by Professor C. S. Sargent, Director of the Arnold Arboretum of Harvard University, and a set of 1,700 species of North American fungi, presented by Joseph B. Whittier, Esq., of East Saginaw.

The whole Botanical Cabinet contains about 70,000 specimens, representing 10,000 species, under 20,000 entries.

The collections of Natural History are estimated to contain about 255,000 specimens, under 60,000 entries.

II. INDUSTRIAL COLLECTIONS.

Our collections illustrative of the materials, processes, and products of the industrial arts and of agriculture have recently received a large and valuable addition. In 1885 the Chinese Government presented to the University the Exhibit which it sent to the New Orleans Exposition. The whole collection, numbering several thousand specimens, is now on exhibition in a room set apart for its reception in the Museum Building. It illustrates with special fullness the varieties of Chinese cotton and the Chinese processes of manufacturing cotton and the finished products of cotton and also of silk. There are many articles showing the skill of the Chinese in working in wood, in ivory, in embroidery, in porcelain, and in painting on glass and on silk.

We have long had the nucleus of an industrial museum in the botanical and zoölogical cabinets, the cabinet of economical geology, a collection of the seeds of cereals and other field and garden crops, and an interesting collection of textile fibres and various substitutes for cotton. We are desirous of enlarging these collections.

III. ARCHÆOLOGY AND ETHNOLOGY.

This department contains many articles of domestic and warlike use among the North American Indians and the Islanders of the South Pacific; numerous remains of the ancient Peruvians, and many specimens of clothing, art, etc., of the Amazonian Indians, modern Peruvians, Formosans, and natives of the East Indies and Alaska. The Chinese Exhibit above referred to contains a large number of articles which belong to the ethnological collection.

IV. THE FINE ARTS AND HISTORY.

The works of art belonging to the University are on exhibition in the galleries provided for them in the Library Building, and a printed catalogue has been prepared by Professor Frieze. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of the most valuable ancient statues and busts, such as the Apollo Belvedere, the Laocoön, the Sophocles, etc.; a gallery of more than two hundred reductions and models in terra cotta and other materials; the statues of Nydia and of Ruth Gleaning, by Randolph Rogers; copies of modern statues, busts, and reliefs: a gallery of engravings and photographic views, illustrating especially the architectural and sculptural remains of ancient Italy and Greece; a small collection of engraved copies of the great master-pieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, and the GOVERNOR BAGLEY COLLECTION,—the former illustrative of ancient, mediæval, and modern European history, the latter designed to embrace all the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. A. E. Richards.

The late HENRY C. LEWIS, Esq., of Coldwater, Mich., by his will bequeathed to the University his valuable collection of works of art, comprising about six hundred and fifty paintings and some forty pieces of statuary. The collection remains for the present at Coldwater, but will ultimately be transferred to the University Gallery.

The ROGERS GALLERY, comprising the entire collection of the original casts of the works of Randolph Rogers, more than a hundred in number, has been given by that distinguished sculptor to the State of Michigan for the University Museum. About one-half of this collection has already been received and arranged in the Art Museum.

V. ANATOMY AND MATERIA MEDICA.

This Museum is used more especially in connection with the instruction given in medicine, and a fuller description of it will be found in the chapter on the Department of Medicine and Surgery.

THE LABORATORIES.

In the several Laboratories of the University opportunities are provided for practical instruction in Physics, Chemistry, Geology, Zoölogy, Botany, Physiology, Histology, Engineering, and Dentistry.

I. THE PHYSICAL LABORATORY.

The course of instruction in the Physical Laboratory is intended to help the student to acquire skill in the use of physical apparatus, confidence in his ability to determine for himself well-known constants of nature, and that intimate knowledge of the principles of physics which can be obtained neither from text-book nor lecture.

Apparatus is already provided for determination of weights and densities in the metric system, coefficients of elasticity, vibration-frequency and composition of musical sounds, indices of refraction, wavelengths and intensities of light, electrical resistance and electromotive force. The Laboratory is well supplied with apparatus in the subjects of sound and light; and it is intended to secure as soon as possible a large increase of appliances for the production and measurement of electricity, with special reference to the needs of students in engineering.

II. THE CHEMICAL LABORATORY.

In this Laboratory, facilities are provided for systematic instruction in laboratory methods of chemical study, including general chemistry, analytical and applied chemistry, physiological chemistry, pharmacy, metallurgy, and assaying, and favorable opportunities are afforded for original research.

The laboratory building is so arranged as to provide room for ten distinct branches of chemical work within the college year, in addition to the lecture-rooms, balance-rooms, instructors' rooms, and store-rooms. Two hundred and sixty-two students can be provided with tables for work at the same time. The Laboratory is open to all students of the University, and is regularly used by all Departments except the Department of Law. The Laboratory is also open to any person who wishes to pursue special studies therein, provided he comply with the conditions for admission to that Department of the University to which the desired special studies properly belong.

In all these courses of instruction there are recitations and lectures in the class room, giving direction daily to the student at his table, and demanding constant study of the work undertaken. This method of teaching makes it indispensable that the student begin with a class. The Laboratory is open to students each week day of the college year.

III. THE GEOLOGICAL, ZOOLOGICAL, AND BOTANICAL LABORATORIES.

Opportunity for practical work in Geology, Zoölogy, and Botany is provided in rooms set apart for this purpose in the new Museum, and in the north wing of the main building. The rooms are furnished with microscopes, photographic instruments, cutting and polishing lathes, and other apparatus for the preparation of specimens. Special encour-

agement and assistance are given to students wishing to carry on original investigations.

IV. THE MICROSCOPICAL LABORATORY.

This Laboratory is used principally by students of the Department of Literature, Science, and the Arts, and of the School of Pharmacy. There is room for the accommodation of forty students working at the same time. Forty compound microscopes, various pieces of other apparatus, such as section-cutters, turn-tables, and balances, two hundred typical specimens of crude drugs, a cabinet of over one thousand mounted sections, microchemical reagents, and the usual conveniences of gas and water, constitute a part of the outfit.

Practical instruction is given in the study of vegetable histology, in pharmacology, and in the detection with the microscope of adulterations of food and drugs. Each student is assigned a separate table and microscope, and is required to prepare his own sections, and to draw, measure, and describe the objects examined.

V. THE HISTOLOGICAL LABORATORY.

This Laboratory is supplied with between twenty and thirty superior microscopes of American manufacture, besides two imported from Europe, and with complete apparatus for use in microscopical investigations. The Laboratory is regularly used by students of all Departments of the University except the Department of Law. Each student is given a course of fifteen lessons. An advanced course is also offered, including original investigations and the more complete study of normal and pathological histology. The student thus becomes familiar with the manipulation of microscopes, and studies the more important tissues of the body, and the methods employed in preparing and mounting specimens. During the last college year nearly three hundred students availed themselves of the opportunities for study here offered.

VI. THE ENGINEERING LABORATORY.

The increasing demand for practical instruction in the Engineering Departments has made it necessary to extend the facilities of this Laboratory. The new building, begun in the year 1885, has been finished and provided with new tools and apparatus.

The Engineering Laboratory comprises the Mechanical Laboratory, the Iron Room or Machine Shop, the Forge Shop, the Wood Room and Pattern Shop, and the Foundry.

The Mechanical Laboratory will, when completed, contain an engine with the attachments necessary to make complete engine tests, including condenser, friction dynamometers, indicators, gauges, and thermometers; boiler testing apparatus, including calorimeters, pyrometers, draft gauges, and metres; apparatus for carrying out hydraulic experiments,

pumps of various manufactures, transmission dynamometers, apparatus for measuring the efficiency of belting, toothed gearing, and friction gearing; and facilities for investigating the efficiency of steam-heating plants. The numerous and valuable gifts of machinery from prominent manufacturers offer to all engineering students unusual facilities for becoming acquainted with the best modern forms of machines. The work of this Laboratory will also extend to the testing of engines, boilers, and water-wheels of neighboring mills and electric light plants. The Knowles pumping engines at the city water works have been fitted up by the company with especial reference to the convenience of engineering students in making tests.

The Iron Room and the Wood Room have each been much increased in size and afford better facilities for doing work than ever before. A quantity of new machinery has been added to each shop so that engineering students and others desiring instruction and practice in the use of tools for working in wood and metal may be properly accommodated, and at the same time have opportunity to become familiar with the more common materials and forms of construction used in engineering structures, buildings, and machinery. In all shop-work an effort is made to follow the practice of the best shops. Several of the machines in use have been designed and built by the students themselves.

VII. PHYSIOLOGICAL LABORATORY.

The Physiological Laboratory includes in its equipment the most essential instruments employed in physiological demonstration and research. It is unusually well provided with instruments for exact investigation of the phenomena of the circulation as well as those of muscle and nerve, and with a somewhat extensive set of optical, electrical, and microscopical apparatus. A lathe and a good set of working tools have been provided for the use of the Department.

The Laboratory is open daily for the purpose of experiment and research.

VIII. THE DENTAL LABORATORY.

This Laboratory has been fitted up especially for students in the College of Dental Surgery. It contains eight charcoal and coke furnaces; also, sand tables, rolling-mill, and other appliances for the various manipulations of Prosthetic Dentistry, such as the construction of artificial dentures in gold, continuous gum, silver, aluminium, and other bases; appliances for the regulation of teeth, the mechanical treatment of oral deformities, and the construction of instruments. The Laboratory has accommodations for fifty students at a time.

THE HOSPITALS.

During the past few years the facilities for clinical instruction in the two Medical Schools connected with the University have been largely increased. By the liberality of successive legislatures, aided by contributions from the city of Ann Arbor, ample hospital accommodations have been provided. The University Hospital is under the direction of the Faculty of the Department of Medicine and Surgery; the Homœopathic Hospital is connected with the Homœopathic Medical College. Further information in regard to the Hospitals is given in connection with the descriptions of the Medical Schools.

FEES AND EXPENSES.

Every student before entering any Department of the University is required to pay a matriculation fee. This fee, which for residents of Michigan, is ten dollars, and, for those who come from any other State or country, twenty-five dollars, is paid but once, and entitles the student to the privileges of permanent membership in the University.

In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses. This fee is paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fee as undergraduates. The annual fee in the several departments of the University is as follows:

Department of Literature, Science, and the Arts: for residents of Michigan, twenty dollars; for non-residents, thirty dollars.

Department of Medicine and Surgery: for residents of Michigan, twenty-five dollars; for non-residents, thirty-five dollars.

Department of Law: for residents of Michigan, twenty-five dollars; for non-residents, thirty-five dollars.

School of Pharmacy: for residents of Michigan, twenty-five dollars; for non-residents, thirty-five dollars.

Homœopathic Medical College: for residents of Michigan, twenty-five dollars; for non-residents, thirty-five dollars.

College of Dental Surgery: for residents of Michigan, twenty-five dollars; for non-residents, thirty-five dollars.

The matriculation fee and the annual fee must be paid at the beginning of the college year. A By-Law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees that are due.

The fee for the diploma given on graduation is ten dollars, and the By-Laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for diploma.

Students who pursue Laboratory courses of study are also required to pay for the materials and apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from one dollar to twenty dollars. The Laboratory expenses of students will vary with their prudence and economy. Experience has shown that in the Chemical Laboratory the average expense is about one dollar and twenty cents a week for all courses.

Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office.

The annual expenses of students, including clothing and incidentals, are, on the average, about three hundred and seventy dollars.

It is proper to say, in answer to numerous inquiries, that the University does not undertake to furnish manual labor to students; yet a small number find opportunities in the city for remunerative labor.

Relation of Students to the City Government.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

DEPARTMENT OF Literature, Science, and the Arts.

The Department of Literature, Science, and the Arts, owes its name to a provision in the legislative act by which the University was organized in the year 1837. In general terms, this department represents the collegiate and technological sides of University work, as distinguished from the work of the professional schools in medicine, law, pharmacy, and dentistry. It includes also the School of Political Science.

The courses of instruction are arranged to meet the wants not only of such as are fitted to take up a systematic course of study in the classics, or in science, but also of those whose preparatory studies have not included any ancient or foreign language. Special students, who wish to pursue miscellaneous studies, are admitted on conditions stated beyond.

The academic year extends from the first day of October to the Thursday following the last Wednesday in June.

In what follows, the work of this department is described under these heads: 1, Requirements for Admission; 2, Courses of Instruction; 3, Requirements for Graduation; 4, Further Description of Courses in Technological and Professional Studies; 5, the School of Political Science; 6, Rules and Regulations of the Department.

I. REQUIREMENTS FOR ADMISSION.

Candidates for admission must be at least sixteen years of age, and must present satisfactory evidence of good moral character. They must be provided with credentials from their last instructor,

or from the last institution with which they have been connected. These credentials must be presented to the President at his office, before the candidate can enter upon the examination.

Admission of Candidates for a Degree.

[For Admission to Advanced Standing, see page 35.]

Students who desire to become candidates for a degree must, unless admitted on diploma,* pass examinations as follows:

I. FOR THE DEGREE OF BACHELOR OF ARTS.

Candidates will be examined in the following subjects:

1. ENGLISH LANGUAGE, COMPOSITION, AND RHETORIC. The examination will be as follows:

a. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

b. An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, paragraphing, figures of speech, and theme-analysis. The subjects for 1887 will be taken from the following works, with the substance of which,—the plots, incidents, characters, etc.,—it is expected that the student will by careful reading thoroughly familiarize himself: Shakespeare's *Merchant of Venice*; Goldsmith's *Deserted Village*; and George Eliot's *Mill on the Floss*. The subjects for 1888 will be taken from Shakespeare's *Midsummer Night's Dream*; Lowell's *Biglow Papers*; Thackeray's *The Newcomes*. Equivalents of these will, of course, be accepted.

For securing the proper preparation, the following course is recommended: 1. A few lessons and constant practice in the proper use of the *Unabridged Dictionaries*. 2. A review of the elements of English Grammar during the last years of the preparatory course. 3. Daily recitations for at least one term in some such work as D. J. Hill's *Elements of Rhetoric and Composition*, A. S. Hill's *Principles of Rhetoric*, or Kellogg's *Rhetoric*. 4. A term's special study of sentential structure, with the aid of such a text-book as Abbott's *How to Write Clearly*. 5. A careful reading of one of Shakespeare's plays, and of one prose and one poetical masterpiece. Use annotated editions of Shakespeare's plays, as Hudson's, Rolfe's, Meiklejohn's, or those of the Clarendon Press series; as far as possible use annotated editions also of the prose and poetical masterpieces. 6. Weekly exercises in original composition, for at least two years. A large proportion of those who seek admission to the University are found to be very deficient in their preparation in English. It

* See page 37.

is on every account desirable that such deficiency be removed as far and as fast as possible, and that the requirements in English for admission to the University be enlarged.

2. **GEOGRAPHY.**—General facts of Physical Geography; the Political Geography of Europe and the United States; Ancient Geography, particularly that of Italy, Greece, and Asia Minor.

3. **HISTORY.**—In Grecian History, the first three books of Smith's History of Greece, exclusive of the chapters on Literature and Art; Leighton's History of Rome, fifty-four chapters, to the accession of Augustus, or an equivalent; an outline of the History of the United States, to the close of the Revolutionary War.

4. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominative Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, Ratio, Proportion, the Progressions, and an elementary knowledge of Logarithms; *i. e.*, through Olney's Complete School Algebra, or an equivalent in other authors.

Geometry.—Plane, Solid, and Spherical Geometry; *i. e.*, the first two parts of Olney's Geometry, or an equivalent in other authors.

N. B. High schools whose graduates are received on diploma have for several years been required to have such graduates review Algebra and Geometry in their last preparatory year; and it is equally important that other students should do the same if they expect to succeed in the study of mathematics in the University.

5. **LATIN.**—*Grammar.*—A thorough preparation in the elements. For this purpose Harkness's, or Allen and Greenough's, Grammar, is recommended.

Prose Composition.—Jones's Exercises in Latin Prose Composition; or Harkness's Introduction to Latin Composition, from page 50 to page 166; or forty-four exercises in Arnold's Latin Prose Composition.

Reading.—Four books of Cæsar's Commentaries; six select Orations of Cicero; and the whole of the Æneid; for the last six books of the Æneid all the Eclogues and Georgics may be substituted; for the last four, all the Eclogues; for the last two, 1,200 lines of Ovid.

The study of the first six books of the Æneid should be accompanied with the study of Prosody. In reading the last six books the principal aim should be to acquire facility in translation, and increased knowledge of the Latin vocabulary. It is supposed that the student, already familiar with the style of Vergil, will be able to read this portion of the Æneid more easily and rapidly than an equal amount in any other textbook.

The pronunciation of Latin used in the University is as follows:

VOWELS.

Long.

a as in *father*.
e as in *they*.
i as in *machine*.
o as in *go*.
u as *oo* in *too*.

Short.

a as in *father*, but shorter, (not as in *hat*).
e as in *met*.
i as in *pity*.
o as in *for* (not as in *cot*).
u as in *pull*, (not as in *but*).

DIPHTHONGS.

In pronouncing the diphthongs the sound of both vowels is preserved.

ae as *ay*.
au as *ow* in *power*.
oe as *oi* in *oil*.

eu nearly as *u* in *use*.
u in *ua*, *ue*, etc., as *w*.
ei as in *rein*.

CONSONANTS.

c as in *can*.
ch as *k*.
g as in *gun*.
j as *y* in *young*.

s as in *sin*.
t as in *tin*.
v either as French *ou* in *ouï*, or as English *v*.
 Other consonants as in English.

Four years, if possible, should be given to the above preparatory course in Latin.

6. GREEK.—*Grammar*.—Hadley's, or Goodwin's. The etymology must be thoroughly mastered.

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents and to the general principles of syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis*.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's, or White's, *First Lessons in Greek* will be found valuable.

Two full years of daily recitation ought to be given to preparation in Greek.

II. FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Candidates will be examined in all the subjects required for the admission of candidates for the degree of Bachelor of Arts (see page 30), excepting what is required in Greek and in Grecian History; and also in French, or in German, the same as for the degree of Bachelor of Science (see below).

III. FOR THE DEGREE OF BACHELOR OF SCIENCE.

Two groups of requirements for admission of candidates for the degree of Bachelor of Science are given below:—the first for students who intend to complete the requirements for graduation in General Science, in Chemistry, or in Biology, as given on subsequent pages; the second for students who intend to pursue courses in Civil, Mechanical, or Mining Engineering.

L. FOR THE COURSE IN GENERAL SCIENCE, IN CHEMISTRY,
OR IN BIOLOGY.

Candidates will be examined in the following subjects:

1. **ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.**—In all, the same as for the degree of Bachelor of Arts (see page 30).

2. **HISTORY.**—An outline of General History; an outline of the History of the United States, to the close of the Revolutionary War. A year's study ought to be given to preparation in History.

3. **FRENCH, GERMAN, AND LATIN.**—Candidates may offer either French and German; French and Latin; or German and Latin;—two of these three languages being required. The requirements in each are as follows:

French.—The whole subject of French Grammar. The candidate will be expected to be thoroughly familiar with the formation and use of French verbs, to read at sight easy French, and to translate correctly into French simple English sentences. Two years ought to be given to this purpose, the first year being spent on the grammar, and the second devoted to reading good modern French, accompanied by grammatical analysis and exercises in writing. Hennequin's French text-books are especially recommended; preparation in Fasquelle or Otto will be accepted.

German.—The whole subject of German Grammar. The candidate will be expected to read easy German at sight, and to translate simple sentences from English into German. To this end he should have devoted two years to the study; one year to the grammar, reader, and the writing of exercises, and a second year to the reading of complete works of literary art. As a text for the second year's study, works in dramatic form, and especially the classical plays of Schiller, are recommended.

Latin.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book: four books of Caesar's Commentaries, and one of Cicero's Orations. It is expected that about two years will be given to preparation in Latin.

4. **NATURAL PHILOSOPHY.**—An amount represented by one year of study, with experimental illustrations. Gage's Elements of Physics, or Avery's Natural Philosophy, is recommended as a text-book.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class Book of Botany; also, an analysis and written descriptions of fifty species of Phanerogams.

6. **CHEMISTRY, GEOLOGY, ZOÖLOGY, AND PHYSIOLOGY.**—The candidate may offer any one of these subjects. The requirements, intended to cover a half year's work in each subject, are as follows:

Chemistry.—Nichols's Abridgment of Eliot and Storer's Manual, Shepard's Chemistry, or an equivalent.

Geology.—Candidates who offer themselves in Geology must be well acquainted with the elements of lithological, dynamical, and historical geology, as presented in Winchell's "Geological Studies," or some other good work. Especial stress is laid on familiarity with a dozen or two of the more common species of rocks and their included minerals, on the tables of classification of geological formations, on the general nature of the succession of organic forms, and on the doctrines of sedimentation, erosion, upheaval, and subsidence.

This preparation is intended to furnish some such fitness for more advanced study as is demanded in the departments of mathematics and languages. It is the equivalent of Course 1 in the University. Experience proves, however, that these points are not well understood. Most students presenting themselves for examination hitherto, have failed in thoroughness, readiness, and freshness of knowledge. Candidates are expressly notified that a few week's indifferent instruction, two, or three, or four years previously, without use of specimens, and without any field observation, can never supply that clear and ready acquaintance with the subject which is requisite for more advanced work in the University. Still less can a hasty reading up for the examination, in the lack of previous thorough study, answer the requirement.

It is understood that Geology is not generally taught in the preparatory schools, especially of Michigan, in such a way as to secure the requisite preparation. Candidates, therefore, who apply without due preparation, can enter on condition, and supply the deficiency by taking Course 1 or 2. But no "credit" will be given a student passing examination in Course 1 or 2, if a candidate for a degree requiring such study as preparatory for admission. Also, if any candidate for a degree *not* requiring Geology as a preparatory study, subsequently becomes, after having secured his "credits" in Course 1 or 2, a candidate for a degree *requiring* Geology as a preparatory study, then the credits gained in Geology while candidate for the former degree will be cancelled. Otherwise, the latter degree would not represent the required collegiate study *plus* the prescribed preparation.

Candidates sustaining the required preparatory examination in Geology will be fitted to take Course 3 or 9 in the first semester, or Courses 5 and 6 in the second semester.

Zoölogy.—Packard's Zoölogy, or Nicholson's Manual of Zoölogy.

Physiology.—Martin's The Human Body.

II. FOR THE COURSES IN ENGINEERING.

Candidates for a degree in any of the courses of engineering will be examined in the following subjects:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 30).
2. HISTORY AND NATURAL PHILOSOPHY.—In both, the same as for the Course in General Science (see page 33).
3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 35).
4. CHEMISTRY, GEOLOGY, ZOÖLOGY, AND PHYSIOLOGY.—in any two of these subjects (see above).

IV. FOR THE DEGREE OF BACHELOR OF LETTERS.

Candidates will be examined in the following subjects:

1. **ENGLISH LANGUAGE.**—The same as for the degree of Bachelor of Arts. Inasmuch as no foreign language is required in preparation for this Course, it will be necessary, in order to secure a corresponding grade of attainments, to give more time to the study of the English language than is required in preparation for the other Courses. It is expected that the preparatory schools will devote at least two years of daily recitation to Word-Analysis, Sentence-Analysis, Composition, and the Elements of Rhetoric.

2. **ENGLISH LITERATURE.**—Daily recitations for at least one year will be requisite. Stopford A. Brooke's Primer, or any one of the Manuals, may be used for an outline of the subject. As much time as practicable should be given to the careful reading and study of representative authors in each period. Candidates having devoted special time to the subject may apply for advanced standing in English Literature.

3. **GEOGRAPHY AND MATHEMATICS.**—In both, the same as for the degree of Bachelor of Arts (see page 30).

4. **NATURAL PHILOSOPHY AND BOTANY.**—In both, the same as for the degree of Bachelor of Science (see page 33).

5. **CHEMISTRY, GEOLOGY, ZOOLOGY, AND PHYSIOLOGY.**—In any one of these, the same as for the degree of Bachelor of Science (see page 34).

6. **HISTORY.**—The same as for the degree of Bachelor of Science, and, in addition, Bright's History of England, Vol. I., or Green's Shorter History, Chapters I.-V., or the whole of Thompson, or of Lancaster.

7. **CIVIL GOVERNMENT.**—Martin's.

Students will be examined on subjects rather than on specified text-books. Candidates who have not pursued the exact course marked out above will be allowed to present other subjects as equivalents, provided they have the preparation necessary to enter upon the studies required for the degree of Bachelor of Letters as those studies are taught in the University.

Admission to Advanced Standing.

1. Candidates for advanced standing who do not come from some other university or college will be examined in the studies preparatory to admission to the University, and also in such undergraduate studies as they may ask to be credited with in advance.

2. Students who have completed at least one year's college work in an approved college, and who bring explicit and official certificates describing their courses of study and scholarship, and testifying to their good character, will be admitted without examination, except such as may be necessary in order to determine what credit they are to receive for work done in the college from which they have come and what courses of study they may profitably pursue in the University. Students coming from colleges whose requirements for admission are substantially equivalent to those of this University may thus expect to gain equal standing here.

Admission of Students not Candidates for a Degree.

Students who desire to pursue studies in this Department, and do not desire to become candidates for a degree, will be admitted on the following conditions:

1. All persons under twenty-one years of age must pass the entrance examinations required of candidates for some degree, and above described.
2. Persons over twenty-one years of age must show that they have a good knowledge of English and are otherwise prepared to pursue profitably the studies they may desire to take up.
3. Should a student who enters under the preceding provision (2), subsequently become a candidate for graduation, he must pass all the examinations for admission, required of such a candidate, at least one year previous to the time when he proposes to graduate.

Times of Examination.

An examination for admission to the Department of Literature, Science, and the Arts, will take place on Saturday and Monday, June 25 and 27, 1887; and another beginning on Monday, September 26, and continuing through the Tuesday, Wednesday, Thursday, and Friday following. The examinations will begin at 9 o'clock a. m. of each day. Candidates may take their examination at either of these times, or may take a part in June, and a part in September. In either case it is particularly desired that they present themselves on the first day of the examination.

Examinations for admission will also be held at Chicago and Dubuque, and possibly at some other western cities, on June 28 and

29. The place and the hours will be announced in the newspapers of those cities.

Admission on Diploma.

The right to admission on diploma, which was formerly limited to students of schools in Michigan, is now extended to students of schools in other States.

On request of the School Board in charge of any school, the Faculty will designate a committee to visit the school and report upon its condition. Usually this committee will consist of members of the Faculty; but whenever, owing to the great distance of a school from Ann Arbor or to some other cause, this is found impracticable, other persons may be designated who under the direction of the Faculty may perform the work of inspection.

If the Faculty shall be satisfied from the report of their committee that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission of candidates for any one or more of our degrees, then the graduates from *the approved preparatory course or courses* will be admitted to the University without further examination, and permitted to enter upon such undergraduate work as the preparatory studies contemplated. They must present to the President, within a year and three months after their graduation, the diplomas of their School Board, certifying that they have sustained their examinations in all the studies prescribed for admission as candidates for some one of our degrees. They will also be required to appear at once in their places; otherwise they can be admitted only upon examination.

The schools which shall be approved shall be entitled to send their graduates on diploma for a period of three years (inclusive of the year of visitation) without further inspection, provided that the Faculty are satisfied that within this period no important changes affecting the courses of study and the efficiency of the instruction make another inspection necessary. Otherwise, the Faculty reserves the right to require a new inspection if the relation between the school and the University is to be maintained. Should the authorities of any school at any time within this period desire that a committee of inspection visit their school, the Faculty will always grant such a request if it be practicable.

It is expected that the Superintendent of each approved school shall annually, at a date not later in the year than March first, send to the President a catalogue of the school if one is printed. If no catalogue is published, he will be expected to send a statement, giving the names of the teachers, the number of pupils, and a description of the courses of study.

A circular giving fuller details on this subject can be obtained on application to the President.*

II. COURSES OF INSTRUCTION.

The University provides a large number of Courses of study in the various branches of learning, from which the student may choose his studies. The studies chosen may be pursued in any order, subject only to certain regulations prescribed by the Faculty and to be found on a subsequent page. Some further particulars concerning the courses are given in a special Announcement furnished annually to students.

The courses offered are subject to change from year to year. Those offered for the year 1886-87 are as follows:

I. THE CLASSICS.†

GREEK.—FIRST SEMESTER.

1. *Lysias. Monday, Tuesday, Wednesday, and Thursday, Sec. 1., 9-10; Sec. II., 10-11. Mr. MILLER.*

* In 1885-6 the list of schools approved as qualified to prepare students for the University was as follows:

1. For courses leading to all degrees: Adrian, Ann Arbor, Bay City, Battle Creek, Coldwater, Detroit, East Saginaw, Flint, Grand Rapids, Ionia, Jackson, Manistee, Michigan Military Academy, Monroe, Pontiac, Ypsilanti, Decatur, Ill., High School; Granger Place School, Canandaigua, N. Y.; Ottawa, Ill., High School; Peoria, Ill., High School; Placerville Academy, California; St. Paul, Minn., High School.
2. For courses leading to all degrees except A. B.: Alpena, Big Rapids, Lansing, Owosso, Saginaw.
3. For courses leading to the degrees of A. B., and Ph. B.: Jennings Seminary, Aurora, Ill.
4. For courses leading to the degrees of B. S., and B. L.: Fenton, Hastings, Mt. Clemens, Niles.
5. For courses leading to the degree of B. L.: Charlotte, Howell, Port Huron, Raisin Valley Seminary, Vassar.

† SCHOOL OF CLASSICAL STUDIES AT ATHENS.—This University, through the generosity of some of its friends, has become a contributor to the support of the American School of Classical Studies at Athens. The School affords facilities for archæological and classical investigation and study in Greece, and graduates of the Department of Literature, Science, and the Arts of this University are entitled to all its advantages without expense for tuition. Professor M. L. D'Ooge is Director of the School for the year 1886-7.

All students, except those who are admitted to advanced standing, will be required to pursue Course 1 before passing on to the other Courses; the latter may be taken in the order the student prefers.

3. Demosthenes (Public Orations, the Olynthiacs and Philippics); Lectures on Athenian Constitutional History. *Monday, Tuesday, Wednesday, and Thursday, 11-12.* Professor PATTENGILL.
4. Homer (Iliad). Lectures on Homeric Antiquities. *Monday and Thursday, 3½-4½.* Mr. MILLER.
5. Teachers' Seminary. *Friday, 9-10.* Mr. MILLER.

Course 5 is open only to those who have completed all the required Courses and at least two hours of elective work in Greek.

12. Greek Seminary. Studies in Sophocles. *Friday, 10-12.* To count as a two-fifths Course. Professor PATTENGILL.
21. Plato (Phaedo, and Meno). *Tuesday and Thursday, 10-11.* Professor PATTENGILL.

SECOND SEMESTER.

6. Homer (Odyssey). *Tuesday, Wednesday, and Thursday, Sec. I., 10-11; Sec. II., 11-12.* Mr. MILLER.
10. Teachers' Seminary (Prose Composition). *Friday, 11-12.* Mr. MILLER.

Course 10 is a continuation of Course 5, and both are required for the Teachers' Diploma.

13. History of Greek Literature. Lectures and recitations. *Friday, 3½-4½.* Mr. MILLER.
20. Sophocles (Electra); Aristophanes (Frogs). *Monday, Tuesday, Wednesday, and Thursday, 10-11.* Professor PATTENGILL.
22. The Lyric Poets. Pindar. *Tuesday and Thursday, 9-10.* Professor PATTENGILL.
- 22a. The Lyric Poets. Lyric Anthology. *Friday, 9-10.* Professor PATTENGILL.
24. Plato (Selections from the Republic). *Monday and Wednesday, 9-10.* Professor PATTENGILL.

Course 24 must be preceded by Course 21 or an equivalent.

26. Modern Greek. *Twice a week. Hours to be arranged with the instructor.* Mr. MILLER.

LATIN.—FIRST SEMESTER.

1. Livy (Book XXI); Grammar; Prose Composition. *Tuesday, Wednesday, and Friday, Sec. I., 11-12; Sec. II., 1½-2½; Sec. III., 2½-3½; Sec. IV., 3½-4½.* Mr. McLAUGHLIN.

Courses 1 and 6 must precede all the rest.

2. Quintilian (Book X.); Horace (Ars Poetica): Lectures on Roman Literature, accompanied by recitations in Cruttwell's Roman Literature, and by brief analyses of authors. *Tuesday, Wednesday, Thursday, and Friday*, Sec. I., 9-10; Sec. II., 10-11. Professor ELISHA JONES.
- [3. Pliny (Letters). Lectures. *Tuesday and Thursday*, 10-11. Professor FRIEZE.

Course 3 is omitted in 1896-87. but may be expected in 1887-88.]

4. Classical Antiquities and Art, with the Latin text of Pliny the Elder on Ancient Sculpture and Painting. Lectures. *Tuesday*, Sec. I., 3½-4½; *Thursday*, Sec. II., 3½-4½. Professor FRIEZE.

Course 4 can be taken only by those who have completed either the work required for some degree, or an equivalent of such work.

5. Teachers' Seminary (Æneid). *Friday*, 4½-5½. Professor FRIEZE.

Course 5 must be preceded by Courses 1, 2, 6, and 8.

15. Seneca (Tragedies). Lectures. *Monday, Wednesday, and Friday*, 10-11. Professor FRIEZE.
22. Cicero's Letters. *Monday and Wednesday*, 7¾-8¾. Professor ELISHA JONES.
23. Lucretius (De Rerum Natura). *Tuesday and Thursday*, 10-11. Professor FRIEZE.

SECOND SEMESTER.

6. Terence (Andria, and Adelphi); Horace (Epodes, and Epistles). *Monday, Tuesday, Wednesday, and Friday*, Sec. I., 11-12; Sec. II., 1½-2½; Sec. III., 2½-3½; Sec. IV., 3½-4½. Mr. McLAUGHLIN.

See note to Course 1.

7. Horace (Odes, Books I.-IV.). *Monday and Wednesday*, 7¾-8¾. Professor ELISHA JONES.
8. Horace (Satires); Juvenal (Satires); Persius (Satire V.). *Tuesday, Wednesday, Thursday, and Friday*, Sec. I., 9-10; Sec. II., 10-11. Professor ELISHA JONES.
9. Tacitus (Germania, and Agricola). Lectures. *Monday, Wednesday, and Friday*, 10-11. Professor FRIEZE.
10. Cicero (Tusculan Disputations). Lectures. *Wednesday*, 11-12. Professor FRIEZE.
11. Classical Antiquities and Art. Lectures. *Tuesday*, Sec. I., 3½-4½; *Thursday*, Sec. II., 3½-4½. Professor FRIEZE.

Course 11 can be taken only by those who have completed either the work required for some degree or an equivalent of such work.

12. Teachers' Seminary (Prose Composition). *Monday, 4½-5½.* Mr. McLAUGHLIN.

Course 12 must be preceded by Courses 1, 2, 6, and 8.

14. Seneca (Essays). Lectures. *Tuesday and Thursday, 10-11.* Professor FRIEZE.

SANSKRIT.—FIRST SEMESTER.

1. **Beginners' Course.** Recitations from Whitney's Sanskrit Grammar, accompanied by lectures upon the comparative phonetics of the Sanskrit, Greek, Latin, and Germanic languages. *Two-fifths Course. Hours to be arranged with the instructor.* Assistant Professor THOMAS.

Course 1 is open to candidates for a degree in Arts, who have pursued the study of Latin and Greek in the University at least four semesters, and have also some knowledge of German.

SECOND SEMESTER.

2. Interpretation of texts contained in Lanman's Sanskrit Reader. *Two-fifths Course. Hours to be arranged with the instructor.* Assistant Professor THOMAS.

Course 2 must be preceded by Course 1. At the wish of the class Course 2 is converted into a *three-fifths Course*, the additional hour being given to the reading and discussion of papers upon linguistic subjects.

II. MATHEMATICS. *

FIRST SEMESTER.

1. **Advanced Algebra.** *Monday, Tuesday, Wednesday, and Thursday, Sec. I., 3½-4½; Sec. II., 4½-5½.* Professor BEMAN.
2. **General Geometry and Calculus.** *Monday, Tuesday, Wednesday, and Thursday, 2½-3½.* This course is given by lectures. Professor OLNEY.

Course 2 cannot be taken till after Courses 10 or 10a, 12, 14, and 15, or Courses 1 and 5, have been completed.

3. **Advanced General Geometry and Calculus.** *Five times a week, 3½-4½.* Professor OLNEY.

Course 3 cannot be taken till after Course 6 or Course 16 has been completed.

4. **Modern Higher Algebra,** including the elements of Determinants. *Tuesday and Thursday, 11-12.* Assistant Professor C. N. JONES.

* By reason of the death of Professor Olney on the sixteenth of January, a readjustment of the work in Mathematics becomes necessary, but the details cannot be given at the time this Calendar goes to print.

Course 4 cannot be taken until after Courses 10 or 10a, 14, and 15, or Courses 1 and 5, have been completed.

10. Plane and Spherical Trigonometry. *Twice a week. The number of sections, the days, and the hours are to be arranged with the instructor.* Assistant Professor C. N. JONES.

[10a. Plane and Spherical Trigonometry. *Three times a week.*

Course 10a is omitted in 1886-87.]

11. Analytical Mechanics. *Five times a week, 4½-5½.* Assistant Professor C. N. JONES.

Course 11 requires a knowledge of Integral Calculus.

12. Loci of Equations. *Friday, 3½-4½.* Assistant Professor C. N. JONES.

13. General Geometry and Calculus. *Five times a week, 2½-3½.* Professor BEMAN.

Course 13 cannot be taken until after Courses 10 or 10a, 12, 14, and 15, or Courses 1 and 5, have been completed.

17. Mathematical Reading. *Five times a week, 1½-2½.*

Course 17 is designed to give advanced students an opportunity to read standard mathematical works under the direction of the Faculty.

20. Synthetic Geometry, continuation of Course 15. *Monday and Wednesday, 11-12.* Assistant Professor C. N. JONES.

SECOND SEMESTER.

5. Advanced Geometry; Plane and Spherical Trigonometry. *Monday, Tuesday, Wednesday, and Thursday, Sec. I., 3½-4½; Sec. II., 4½-5½.* Professor BEMAN.

6. General Geometry and Calculus, continuation of Course 2. *Monday, Tuesday, Wednesday, and Thursday, 2½-3½.* This course is given by lectures. Professor OLNEY.

7. Differential Equations. *Tuesday and Thursday, 1½-2½.* Professor BEMAN.

Course 7 cannot be taken till after Course 4 and either Course 6 or Course 16 have been completed.

8. Calculus of Variations. *Tuesday, Wednesday, and Thursday, 3½-4½.* Professor OLNEY.

Course 8 cannot be taken till after Course 3 has been completed.

9. Quaternions. *Tuesday, Wednesday, and Thursday, 3½-4½.* Professor OLNEY.

Course 9 cannot be taken till after Course 6 or Course 16 has been completed.

It is not probable that Courses 8 and 9 can both be given; but which is given will depend upon the demand.

14. Advanced Algebra. Lectures and recitations. Lectures, *Wednesday*, $4\frac{1}{2}$ - $5\frac{1}{2}$. Recitation hours are to be subsequently arranged. *To count as a two-fifths Course.* Assistant Professor C. N. JONES.
15. Geometry, including Elements of Projective Geometry. Lectures and recitations. Lectures, *Tuesday*, $4\frac{1}{2}$ - $5\frac{1}{2}$. Recitation hours are to be subsequently arranged. *To count as a two-fifths Course.* Assistant Professor C. N. JONES.
16. General Geometry and Calculus, continuation of Course 13. *Five times a week*, $2\frac{1}{2}$ - $3\frac{1}{2}$. Professor BEMAN.
17. Mathematical Reading. *Five times a week*, $1\frac{1}{2}$ - $2\frac{1}{2}$.
See note to Course 17 in first semester.
19. Elements of the Theory of Functions, including Elliptic Functions. *Twice a week. Hours to be arranged with the instructor.* Assistant Professor C. N. JONES.

III. MODERN LANGUAGES AND LITERATURES.

FRENCH.—FIRST SEMESTER.

1. Beginning French (Hennequin's Text-Books). *Monday, Wednesday, Thursday, and Friday*, Sec. I., $7\frac{3}{4}$ - $8\frac{3}{4}$; Sec. II., $1\frac{1}{2}$ - $2\frac{1}{4}$. Mr. de PONT. Sec. III., 11-12. Mr. HENNEQUIN. Secs. I. and III. are intended especially for candidates for the degree of A. B. or Ph. B; Sec. II., for all other students.

Courses 1 and 5 must precede all others.

2. Idiomatic Analysis (Hennequin's Lessons in Idiomatic French). *Monday and Thursday*, Sec. I., 9-10. Mr. de PONT. Sec. II., 10-11. Mr. HENNEQUIN.

Course 2 is conducted mostly in French, and is intended for those who desire practice in colloquial French.

3. French Classic Dramas. *Monday, Wednesday, and Friday*, 11-12. Professor WALTER.

Course 3 is open to all candidates for the degree of A. B. who have passed Courses 1 and 5, and to such others as receive special permission from the Professor in charge.

10. Corneille (*Le Cid*); Victor Hugo (*Ruy Blas*); Comparative Study of the Classic and Romantic Schools. *Wednesday and Friday*, 10-11. Mr. HENNEQUIN.

In 1886-87 Course 10 is conducted in English.

11. Composition and Translation from English into French. *Wednesday and Friday*, 9-10. Mr. de PONT.

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12. Madame de Sévigné (Letters). Critical, literary, and historical study by composition and conversation. *Monday and Thursday*, 10-11. Mr. de PONT.

Course 12 must be preceded by Course 13.

13. LaFontaine (Fables Choiesies, Philemon et Baucis). Advanced practice in conversation and analysis. *Wednesday and Friday*, 10-11. Mr. de PONT.

Course 13 must be preceded by Courses 2, 11, and 6, 10, or 14.

SECOND SEMESTER.

4. Scientific Reading. *Monday, Wednesday, Thursday, and Friday*, 1½-2½. Mr. de PONT.

Course 4 is intended especially for engineering and scientific students.

5. French Plays and Modern Prose; Grammatical Analysis. *Monday, Wednesday, Thursday, and Friday*, Sec. I., 7¾-8¾; Sec. II., 10-11. Mr. de PONT. Sec. III., 11-12. Mr. HENNEQUIN.

Courses 1 and 5 must precede all others.

6. Victor Hugo (Hernani); Chateaubriand (Attala). *Monday and Thursday*, 10-11. Mr. HENNEQUIN.

7. Montaigne. *Monday, Wednesday, and Friday*, 11-12. Professor WALTER.

The requirements for admission to Course 7 are the same as to Course 3.

8. The Drama of the Romantic School. *Wednesday and Friday*, 10-11. Mr. HENNEQUIN.

Course 8 must be preceded by Courses 1, 2, and 5; and it is recommended that it be preceded also by Course 6 or by Course 10.

9. Teachers' Course. *Monday and Thursday*, 9-10. Mr. HENNEQUIN.

Course 9 is open only to those that have completed Courses 1, 2, 5, and one other three-fifths Course. See note to Course 14.

14. Lamartine (Lyric Poetry). *Monday and Thursday*, 9-10. Mr. HENNEQUIN.

Courses 9 and 14 are not both given; but which is given is determined by the demand as indicated by the elections made by students.

15. Seminary (Théâtre de Voltaire). *Monday and Thursday*, 2½-4½. Mr. de PONT.

Course 15 must be preceded by Courses 2, 3, 6, 12, and 13.

GERMAN.—FIRST SEMESTER.

1. **Beginners' Course.** Grammar and Reader. *Tuesday, Wednesday, Thursday, and Friday*, Sec. I., 9-10. Mr. HENNEQUIN. Sec. II., 2½-3½. Assistant Professor THOMAS. Sec. III., 3½-4½. Mr. BURNETT.
2. **Lessing's Nathan der Weise.** *Monday, Wednesday, and Friday*, 10-11. Professor WALTER.
Course 2 is open to those who have completed Courses 1 and 3.
6. **Gæthe's Faust (First Part).** *Tuesday and Thursday*, 1½-2½. Assistant Professor THOMAS.
Course 6 is open to those who have completed Courses 1, 2 or 10, 3, and 5 or 12.
7. **The Nibelungenlied.** *Tuesday and Thursday*, 7¼-8¾. Professor WALTER.
10. **Gæthe's Egmont and Hermann and Dorothea.** *Monday, Wednesday, and Friday*, 1½-2½. Assistant Professor THOMAS.
Course 10 is open to those who have completed Courses 1 and 3.
11. **Selected Essays of Schiller.** *Tuesday and Thursday*, 10-11. Professor WALTER.

SECOND SEMESTER.

3. **German Plays.** *Tuesday, Wednesday, Thursday, and Friday*, Sec. I., 9-10; Sec. II., 10-11. Mr. BURNETT. Sec. III., 11-12. Assistant Professor THOMAS. Secs. I. and II. will read Lessing's *Minna von Barnhelm* and Schiller's *Maria Stuart*. Sec. III. will read Schiller's *Wilhelm Tell* and *Die Jungfrau von Orleans*.
4. **Lessing's Laokoon.** *Wednesday and Friday*, 10-11. Professor WALTER.
Course 4 is open to those who have completed two and three-fifths Full Courses in German.
5. **Selections in Prose from the Minor German Classics.** *Tuesday and Thursday*, 10-11. Professor WALTER.
Course 5 is open to those who have completed Courses 1 and 3.
8. **The Nibelungenlied, continuation of Course 7.** *Tuesday and Thursday*, 7¾-8¾. Professor WALTER.
9. **Gæthe's Faust (Second Part).** *Wednesday and Friday*, 7¾-8¾. Assistant Professor THOMAS.
Course 9 is open to those who have completed Course 6.
12. **German Lyric Poetry.** Recitations from Buchheim's *Deutsche Lyrik*, accompanied by biographical and critical lectures. *Tuesday and Thursday*, 7¾-8¾. Assistant Professor THOMAS.

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Course 12 is open to those who have completed Courses 1, 2 or 10, and 3.

13. Teachers' Course. The work will consist mainly of translations from English into German, the exercise being conducted so far as practicable in German. *Tuesday and Thursday*, 9-10. Assistant Professor THOMAS.

14. Schiller (Wallenstein, Parts I. and II.). *Wednesday and Friday*, 9-10. Mr. HENNEQUIN.

Course 14 must be preceded by Courses 1 and 3.

ITALIAN.

The Courses in Italian are omitted in 1886-87 but may be expected in 1887-88.

FIRST SEMESTER.

[1. Cuore's Italian Grammar. I Promessi Sposi. *Tuesday and Thursday*, 11-12. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.]

SECOND SEMESTER.

[2. Continuation of Course 1. *Tuesday and Thursday*, 11-12. Professor WALTER.]

SPANISH.

The Courses in Spanish will be omitted in 1887-88.

FIRST SEMESTER.

1. Knapp's Spanish Grammar and Spanish Readings. *Tuesday and Thursday*, 11-12. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.

SECOND SEMESTER.

2. Continuation of Course 1, *Tuesday and Thursday*, 11-12. Professor WALTER.

IV. ENGLISH AND RHETORIC.

FIRST SEMESTER.

1. Composition and Elocution. Each student will present two Speeches. Composition, *once a week*, 9-10. Mr. BURNETT. Elocution, *once a week*, 2-3. Assistant Professor BURT.

The class will be divided into sections, and exercises will be held five days in the week. The section and the day are to be arranged with the instructor in each case.

2. **Rhetoric.** Lectures and text-book. Each student will present at least two Essays. Additional Essays will be required if in any case they are deemed necessary. *Tuesday and Friday, 4½-5½.* Assistant Professor BURT.

Course 2 is intended for students that have completed at least the first year's work in the University. It must be preceded by Course 1 and by Course 1 or Course 3 in Philosophy.

4. **English Literature; Period of Anglo-Saxon.** Text-books: Sweet's Anglo-Saxon Primer and Sweet's Reader (Prose). *Monday and Wednesday, 2½-3½.* Mr. BURNETT.
5. **English Literature; Period of Early Modern English.** Text-books: Morris's Prologue and Knight's Tale, and Morley and Tyler's Manual of English Literature, Part III. *Thursday and Friday, Sec. I., 1½-2½; Sec. II., 2½-3½.* Professor DEMMON.

Course 5 must be preceded by Course 1 or Course 7, and it is recommended that Courses 4 and 9 be taken before Course 5.

6. **English Literature; Study of Masterpieces:** More's Utopia; Bacon's Essays; Milton's Areopagitica; Burke's Reflections on the French Revolution; Carlyle's Sartor Resartus; George Eliot's Silas Marner; Spenser's Faery Queen, Book I.; Shakespeare's Sonnets; Milton's Paradise Lost; Dryden's Absalom and Achitophel; Pope's Essay on Man; Wordsworth's Excursion; Tennyson's Princess. *Twice a week (once, two hours; once, one hour). Monday, Sec. I., 3½-5½; Tuesday, Sec. II., 3½-5½; Wednesday, Sec. III., 3½-5½; Thursday, Sec. IV., 3½-5½; Friday, Secs. I., II., III., and IV., 3½-4½.* Professor DEMMON.

Course 6 must be preceded by Courses 5 and 10, and by Course 2 or Course 8.

13. **Critical Analysis of Pieces in Prose and Verse.** *Tuesday and Thursday, 2½-3½.* Assistant Professor BURT.

Course 13 is open to those who have taken, or are taking, Course 2, and is intended to be introductory to Courses 6 and 11.

15. **History of the English Language.** A general view of the subject, with Lounsbury's History of the English Language for a text-book, supplemented by notes and lectures. *Tuesday and Thursday, 2½-3½.* Mr. BURNETT.

Course 15 should be preceded by Courses 4 and 9. While not exclusively a Teachers' Course, this Course is recommended to those who expect to be connected with the public schools either as teachers or as superintendents.

16. **Studies in Diction and Lexicography.** *Monday, Wednesday, and Friday, 2½-3½.* Assistant Professor BURT.

19. Seminary in Rhetoric and the Principles of Literary Criticism. Reading and discussion of the whole or of parts of some standard work or works in Rhetoric and Literary Criticism. The work selected for the present year is Aristotle's Rhetoric. *Twice a week. Hours to be arranged with the instructor.* Assistant Professor BURT.

Course 19 is open to students who have passed Course 2.

SECOND SEMESTER.

1. Composition and Elocution. Each student will present two Speeches. Composition, *Monday*, 9-10. Mr. BURNETT. Elocution, *Wednesday*, 3½-4½. Assistant Professor BURT.
2. Rhetoric. Lectures and text-book. Each student will present two Essays. Additional Essays will be required if in any case they are deemed necessary. *Monday and Thursday*, Sec. I., 4½-5½; *Tuesday and Friday*, Sec. II., 4½-5½. Assistant Professor BURT.
3. Extemporaneous Speaking. *Wednesday*, 1½-3½. Assistant Professor BURT.

Course 3 must be preceded by Courses 1 and 2.

9. English Literature; Period of Transitional English. Text-book: Morris's Specimens of Early English, Part I. *Monday and Wednesday*, 2½-3½. Mr. BURNETT.
10. English Literature; Period of Modern English. Lectures and text-book (Morley and Tyler's Manual of English Literature, Part IV.). *Monday and Thursday*, Sec. I., 1½-2½; *Tuesday and Friday*, Sec. II., 1½-2½. Assistant Professor BURT.

Course 10 must be preceded by Course 5.

11. English Literature; Study of Shakespeare. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Richard II., the two parts of Henry IV., Henry V., Richard III., Hamlet, Macbeth, Othello, King Lear, and Coriolanus. *Twice a week (once, two hours; once, one hour).* *Monday*, Sec. I., 9-11; Sec. II., 3½-5½; *Tuesday*, Sec. III., 3½-5½; *Friday*, Secs. I., II., and III., 3½-4½. Professor DEMMON.

Course 11 must be preceded by Course 6.

14. The History of the English Drama. Lectures. *Thursday*, 2½-3½. Professor DEMMON.

Course 14 must be preceded by Courses 5 and 10.

17. Advanced Course in Anglo-Saxon. Text-book: Sweet's Reader (Poetry). *Twice a week. Hours to be arranged with the instructor.* Mr. BURNETT.

In 1887-88, *Beowulf* may be substituted for Sweet's Reader, if there is sufficient demand for it.

18. American Literature Seminary. Authors studied: Irving, Poe, Hawthorne, Bryant, Longfellow, Emerson, Bayard Taylor, Whittier, Holmes, Lowell. *Two-fifths Course. Hours to be arranged with the instructor.* Professor DEMMON.

Course 18 must be preceded by Course 6. Representative works of the authors above named will be studied and compared with masterpieces of British authors, and an attempt made to discover the distinctively "American" element.

V. HISTORY.

FIRST SEMESTER.

1. Political and Constitutional History of England during the Period of Formation. Lectures, *Monday and Wednesday*, 4½-5½; Quiz and Recitation, *Friday*, Sec. I., 3½-4½; Sec. II., 4½-5½. Assistant Professor HUDSON.

4. Historical Seminary. The Constitutional History of England. *Friday*, 9-11. Assistant Professor HUDSON.

Course 4 is open only to such as receive special permission from the instructor in charge, and it must be preceded by Courses 1, 7, and 9.

7. General History of Europe during the Sixteenth and Seventeenth Centuries. Lectures. *Tuesday and Thursday*, 7¼-8¼. Assistant Professor HUDSON.

10. Constitutional History of the United States. *Tuesday and Thursday*, 4½-5½. Professor T. M. COOLEY.

Course 10 must be preceded by Course 1, 9, or 15.

16. American Constitutional Law. Lectures. *Wednesday*, 9-10. Professor T. M. COOLEY.

Course 16 must be preceded by at least two Courses in History and should not be taken before the third year.

18. Taxation. Lectures. *Tuesday and Thursday*, 9-10. Professor T. M. COOLEY.

Course 18 must be preceded by at least two Courses in History and should not be taken before the third year.

21. The History of Europe since the Congress of Vienna. Text-book: Mueller. *Monday and Wednesday*, 9-10. Assistant Professor HUDSON.

Course 21 must be preceded by Course 1, 7, or 9.

SECOND SEMESTER. *

9. Political and Constitutional History of England during the Period of Development. Lectures, *Monday and Wednesday*, $4\frac{1}{2}$ - $5\frac{1}{2}$; Quiz and Recitation, *Friday*, Sec. I., $3\frac{1}{4}$ - $4\frac{1}{2}$; Sec. II., $4\frac{1}{2}$ - $5\frac{1}{2}$. Assistant Professor HUDSON.
12. Historical Seminary. Constitutional History and Constitutional Law of the United States. *Wednesday*, $1\frac{1}{2}$ - $3\frac{1}{2}$. Professor T. M. COOLEY.

Course 12 is open only to such as receive special permission from the instructor in charge, and it must be preceded by four Courses in History, including Course 10, and either preceded or accompanied by Course 14.

14. Constitutional History and Constitutional Law of the United States. *Tuesday and Thursday*, $4\frac{1}{2}$ - $5\frac{1}{2}$. Professor T. M. COOLEY.

Course 14 is a continuation of Course 10, by which it must be preceded.

17. Political and Social History of Europe during the Middle Ages. Lectures, *Tuesday and Thursday*, $2\frac{1}{2}$ - $3\frac{1}{2}$; Quiz, *Friday*, $2\frac{1}{2}$ - $3\frac{1}{2}$. Assistant Professor HUDSON.

22. Municipal Law. Lectures. *Tuesday and Thursday*, 9-10. Professor T. M. COOLEY.

Course 22 must be preceded by at least two Courses in History and should not be taken before the third year.

Course 22 (Municipal Law) and Course 20 (Rights) are given in alternate years.

23. The History of the Eighteenth Century. Text-book: Lodge. *Monday and Wednesday*, 9-10. Assistant Professor HUDSON.

Course 23 must be preceded by Course 1, 7, or 9.

VI. PHILOSOPHY.

Candidates for a degree may take either Course 1 or Course 3 as the prescribed Course in Philosophy. No elective work in this subject can be taken until the required work has been completed or, at least, begun. Students are recommended to take up Formal Logic in their second year, and Empirical Psychology in their third year of University residence.

A student wishing to take all the Courses offered in Philosophy would be advised to take them in about the following order:

Second year, second semester, Course 3.

Third year, first semester, Courses 1, 4, 12, 14.

Third year, second semester, Courses 5, 6, 13.

Fourth year, first semester, Courses 2, 7, 8, 11.

Fourth year, second semester, Courses 9, 10, 15.

* During the absence of Professor Cooley on leave, instruction in his Courses is given by Professor Wells.

FIRST SEMESTER.

1. Empirical Psychology. *Tuesday, Thursday, and Friday*, Sec. I., 7¼-8¼; *Monday, Wednesday, and Friday*, Sec. II., 9-10. Assistant Professor DEWEY.
2. Real Logic, or the Principles of Philosophy. Lectures. *Tuesday, Wednesday, and Friday*, 10-11. Professor MORRIS.
Course 2 must be preceded by Courses 3, 4, and 5.
4. The History of Philosophy: Ancient and Mediæval. Lectures. *Tuesday, Thursday, and Friday*, 11-12. Professor MORRIS.
7. Seminary (Plato's Republic). *Twice a week. Hours to be arranged with the instructor.* Assistant Professor DEWEY.
Course 7 must be preceded by Courses 4 and 6.
- [8. The Philosophy of the State and of History. Lectures. *Monday and Wednesday*, 11-12. Professor MORRIS.
Course 8 must be preceded by Course 6. It is omitted in 1886-87, but may be expected in 1887-88.]
11. Æsthetics; or, The Philosophy of the Beautiful in Nature and the Products of Human Art. Lectures. *Monday and Wednesday*, 11-12. Professor MORRIS.
- [12. Experimental Psychology. Lectures. *Monday and Wednesday*, 7¼-8¼. Assistant Professor DEWEY.
Course 12 is open only to those who have taken or are taking Course 1. It is omitted in 1886-87, but may be expected in 1887-88.]
14. History of Psychology. Lectures. *Monday and Wednesday*, 7¼-8¼. Assistant Professor DEWEY.
Course 14 is open only to those who have taken or are taking Course 1.

SECOND SEMESTER.

3. Formal Logic. Jevon's Lessons in Logic. *Tuesday and Thursday*, Sec. I., 7¼-8¼; Sec. II., 9-10; *Wednesday and Friday*, Sec. III., 7¼-8¼. Assistant Professor DEWEY.
5. The History of Philosophy: Modern. Lectures. *Tuesday, Thursday, and Friday*, 11-12. Professor MORRIS.
Course 5 must be preceded by Course 4 or its equivalent.
6. Ethics, historical and theoretical. Lectures. *Wednesday and Friday*, 10-11. Professor MORRIS.
Course 6 should be preceded by Course 1.
9. Seminary (Hegel's Logic). *Monday and Wednesday*, 11-12. Professor MORRIS.

Course 9 is open only to those who have taken Courses 2, 3, 4, and 5.

- [10. The Philosophy of Herbert Spencer. Lectures. *Tuesday and Thursday*, 4½-5½. Assistant Professor DEWEY.

Course 10 is omitted in 1886-87, but may be expected in 1887-88.]

13. Speculative Psychology. Lectures. *Wednesday and Friday*, 9-10. Assistant Professor DEWEY.

Course 13 must be preceded by Course 1.

15. Kant's Critique of Pure Reason. Morris's Exposition, with lectures. *Tuesday and Thursday*, 4½-5½. Assistant Professor DEWEY.

Course 15 is an advanced Course, to enter which special permission must be had from the instructor in charge.

VII. THE SCIENCE AND THE ART OF TEACHING.

A prescribed course of reading will be required in connection with Courses 1 and 2. Courses 1 and 2 and one other three-fifths Course are requisite to obtain a Teacher's Diploma. Students whose purpose is to prepare themselves for ordinary school-room duties, are advised to pursue Course 1; those who propose to assume the management of high schools, or of graded schools, should take Course 3 in connection with Course 1.

FIRST SEMESTER.

1. Practical: the art of teaching and governing; methods of instruction and general school-room practice; school hygiene; school law. Recitations and lectures. Text-book: Fitch's Lectures on Teaching. *Tuesday, Wednesday, Thursday, and Friday*, 1½-2½. Professor PAYNE.
3. School supervision: embracing general school management, the art of grading and arranging courses of study, the conduct of institutes, etc. Recitations and lectures. Text-book: Chapters on School Supervision. *Monday, Wednesday, and Friday*, 7¼-8¾. Professor PAYNE.
5. History of Education: ancient and mediæval. Text-book: Compayré's History of Pedagogy. *Tuesday, Wednesday, and Thursday*, 4½-5½. Professor PAYNE.

SECOND SEMESTER.

2. Theoretical and critical. Lectures. *Tuesday, Wednesday, Thursday, and Friday*, 1½-2½. Professor PAYNE.
4. Seminary; for the study and discussion of special topics in the history and philosophy of education. *Monday and Wednesday*, 7¼-8¾. Professor PAYNE.
6. The comparative study of educational systems. Lectures. *Tuesday and Thursday*, 7¾-8¾. Professor PAYNE.

7. **History of Education: modern.** Text-book: Compayré's *History of Pedagogy*. *Tuesday, Wednesday, and Thursday*, 4½-5½. Professor PAYNE.

VIII. POLITICAL ECONOMY.

FIRST SEMESTER.

1. **Principles of Political Economy.** Lectures, with readings in Mill's *Political Economy*. Lectures, *Monday and Wednesday*, 1½-2½; Recitations, *Tuesday*, Sec. I., 1½-2½; *Thursday*, Sec. II., 1½-2½; *Friday*, Sec. III., 1½-2½. Dr. ADAMS.
2. **Unsettled Questions in Political Economy.** Lectures. *Monday, Wednesday, and Friday*, 2½-3½. Dr. ADAMS.
3. **Principles and Methods of Finance.** Lectures. *Tuesday and Friday*, 11-12. Dr. ADAMS.
Course 3 may be withdrawn.
4. **Seminary (History of Industrial Society).** *Wednesday*, 6½-8½ P. M. Dr. ADAMS.

Course 4 is open to all who have had one year's study in Economics.

IX. SANITARY AND SOCIAL SCIENCE.

FIRST SEMESTER.

1. **Sanitary Science.** Lectures. *Tuesday and Thursday*, 10-11. Professor VAUGHAN.

SECOND SEMESTER.

2. **Social Science.** Lectures. *Monday and Thursday*, 3½-4½. Professor DUNSTER.

X. INTERNATIONAL LAW.

FIRST SEMESTER.

1. **Lectures on International Law.** *Tuesday and Thursday*, 1½-2½. President ANGELL

Course 1 is open only to those who have completed two Courses in History; Course 7 is especially recommended as one of the two.

SECOND SEMESTER.

2. **History of Treaties.** *Tuesday and Thursday*, 1½-2½. President ANGELL.

Course 2 must be preceded by Course 1.

IX. PHYSICAL SCIENCES.

PHYSICS.—FIRST SEMESTER.

2. **Elementary Physics.** Lectures and recitations. *Five times a week*, 9-10. Professor CARHART.

Course 2 is for students who have not passed a preliminary examination in Physics. It requires a knowledge of Plane Trigonometry.

7. Theoretical Physics. *Twice a week. Hours to be arranged with the instructor.* Professor CARHART.

For admission to Course 7, the requirements are Course 2 or Course 10 in Physics, Course 2 in General Chemistry, and a knowledge of Integral Calculus. Course 16 in Mathematics is recommended.

10. Advanced Physics. Lectures and recitations. *Five times a week, 11-12.* Professor CARHART.

Course 10 is for students who have passed an entrance examination in Physics, and for all others who may have sufficient preparation. A knowledge of Plane Trigonometry is required.

- [12. Laboratory work for advanced students. *Hours to be arranged with the instructor.* Professor CARHART.

Course 12 will not be given in 1886-87, except in case of special urgency, but may be expected as a regular Course in 1887-88 and thereafter.]

SECOND SEMESTER.

3. Physical Laboratory work for beginners. 3a. The same for advanced students. *Three times a week, for two hours, between 2 and 5.* Professor CARHART.

For admission to Course 3 the requirements are Course 2 or Course 10; a knowledge of the elements of Differential Calculus will also be presupposed, though not absolutely required. This Course must be preceded or accompanied by Course 2 in General Chemistry.

4. Physical Laboratory work for beginners. 4a. The same for advanced students. *Five times a week, for two hours, between 2 and 5.* Professor CARHART.

For admission to Course 4, the requirements are the same as for admission to Course 3.

GENERAL CHEMISTRY.

To students desiring a competent knowledge of General Chemistry, the following electives are suggested: first year, Course 2 or Course 10 in Physics, and Course 2 in General Chemistry; second year, Courses 3 and 5 in General Chemistry.

To those desiring to study Analysis, Course 2 and either Course 4 or Course 5 in General Chemistry are suggested as furnishing a good preparation for work in Applied Chemistry.

FIRST SEMESTER.

4. **Laboratory Methods of Studying General Chemistry, and Electro-Chemistry.** *Three times a week, on any three out of five afternoons, two hours each exercise.* Professor LANGLEY.

Courses 4 and 5 must be preceded by Course 2, or an equivalent; they make use of Laboratory methods for general, as distinguished from technical, purposes.

5. **The same subject as in Course 4.** *Five times a week.* 5a. **Teachers' Course,—Course 4, as above, with the addition of two exercises each week in the art of giving experimental lectures in Chemistry.** Professor LANGLEY.

Course 5a is one of the Courses which lead to a Teacher's diploma.

6. **Gas Analysis.** *Three times a week, on any three out of five afternoons.* Professor LANGLEY.

Course 6 must be preceded by Course 5, or its equivalent in Analytical Chemistry.

SECOND SEMESTER.

2. **Experimental and general lectures, with recitations.** *Lectures, Monday, Wednesday, and Friday; Recitations, Tuesday and Thursday, 11-12.* Professor LANGLEY.

Course 2 must be preceded by Course 2 or Course 10 in Physics, or an equivalent.

3. **Lectures and recitations on the Kinetic Theory of Gases and on Chemical Philosophy.** *Tuesday and Thursday, 9-10.* Professor LANGLEY.

Course 3 must be preceded by Course 2, and it is recommended that it also be preceded either by Course 4 or Course 5 in General Chemistry, or by one or more Courses in Analytical Chemistry.

ANALYTICAL CHEMISTRY AND ORGANIC CHEMISTRY.

The Laboratory work requires from two to three hours daily, taken between 12½ and 4½; or, after the Spring Recess, between 12½ and 5½. Permission for forenoon hours in the Laboratory is given when necessary.

Those entering upon the study of Analytical Chemistry for the purpose of science, irrespective of technical application, should first take Course 1 or 3, and 5a, and if possible should obtain Course 11. In Organic Chemistry, Course 6 should be taken first, and either Course 7 or Course 15 may be taken next. For Synthetic Research, Courses 6, 6a, 7, 7a, and 11 should be taken. For Commercial Analysis, Courses 6, 6a, and 15 should be taken. For Physiological Chemistry, Courses 1, 2, 5a, 8, and 8a are advised.

FIRST SEMESTER.

1. Qualitative Analysis. *Five times a week in recitation, and five times a week in Laboratory, to count as two Full Courses.* Recitations, Sec. I., 7¼-8¾; Sec. II., 9-10. Assistant Professor JOHNSON.
6. Organic Chemistry. Lectures. *Monday, Wednesday, and Friday, 10-11.* Professor PRESCOTT.

Course 6 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry, or Course 2 in General Chemistry.

EITHER FIRST OR SECOND SEMESTER.

5. Quantitative Analysis. (a). *Three times a week in recitation and five times a week in the Laboratory, to begin October 1 and close at the holiday vacation; also to begin after the Spring Recess and continue to the end of the year; to count as one Full Course.* (a'), *Twice a week in recitation, and five times a week in the Laboratory, to count as one and two-fifths Full Courses.* (a''), *Continuation of (a'), at the same hours and of the same extent.* (a'''), *Continuation of (a'').* Professor CHEEVER.

Course 5 is open to those who have taken Course 1 or Course 3.

- 6a. Organic Chemistry. Laboratory work. *Twice a week.* Professor PRESCOTT.

Course 6a is open to those who have taken Course 1 or Course 3. It must also be preceded or accompanied by Course 6.

7. Organic Chemistry. Ultimate Analysis and Synthetic Preparations. *Five times a week in the Laboratory.* 7a. *Continuation of Course 7, and of the same extent.* Professor PRESCOTT.

Course 7 is open to those who have taken Courses 1, 5, and either 4 or 6.

8. Physiological Chemistry. *Lectures twice a week, and Laboratory work five times a week, to count as one and two-fifths Full Courses.* 8a. *Continuation of Course 8, and of the same extent.* Professor VAUGHAN.

Course 8 is open to those who have taken Course 1 or Course 3.

9. Assaying Ores, wet and dry ways. *Laboratory work and lectures, every day for two months, to count as a three-fifths Course.* Professor CHEEVER.

Course 9 is open to those who have taken Courses 1 and 5.

10. Blow-pipe Analysis. *Laboratory work and lectures, every day for six weeks, to count as a two-fifths Course.* Professor CHEEVER.

Course 10 must be preceded by Course 1 or Course 3, and must be preceded or accompanied by a Course in Mineralogy.

11. Original Investigations. *Five times a week, Laboratory work and reading.* 11a. Continuation of Course 11, and of the same extent.

Courses 11 and 11a are conducted by different instructors, according to the nature of the investigations, but students wishing to take them must first make application to Professor PRESCOTT. They must be preceded by Courses 1 and 5, and by such other studies as the investigations shall require.

12. Assaying Ores, dry way. *Laboratory work and lectures, every day for six weeks, to count as a two-fifths Course.* Professor CHEEVER.

Course 12 must be preceded by Course 1 or Course 3.

16. Sanitary Examinations. *Lectures twice a week, and Laboratory work five times a week, to count as one and two-fifths Full Courses.* Professor VAUGHAN.

Course 16 is open to those who have taken Course 1 or Course 3.

SECOND SEMESTER.

1. Qualitative Analysis. *Five times a week in recitation, and five times a week in Laboratory, to count as two Full Courses.* Recitation, $7\frac{3}{4}$ – $8\frac{3}{4}$. Assistant Professor JOHNSON.
2. Advanced Qualitative Analysis, continuation of Course 1. *Five times a week in recitation, and five times a week in the Laboratory until the Spring Recess, to count as a four-fifths Course.* Recitation, 9–10. Assistant Professor JOHNSON.
3. Qualitative Analysis. *Twice a week in recitation, and three times a week in the Laboratory, to count as one Full Course.* Recitations, Tuesday and Thursday, $1\frac{1}{2}$ – $2\frac{1}{2}$. Assistant Professor JOHNSON.
13. Manufacture and Purification of Chemicals. *Five times a week in the Laboratory, and once a week in recitation, to begin after the Spring Recess, and to count as a four-fifths Course.* Assistant Professor JOHNSON.

Course 13 is open to those who have completed Courses 1 and 2.

14. Outlines of Chemical Technology. *Lectures. Once a week.* Assistant Professor JOHNSON.

Course 14 is open to those who have taken Course 1 or Course 3.

15. Proximate Organic Analysis, including Toxicology. *Five times a week in the Laboratory.* Professor PRESCOTT.

Course 15 is open to those who have taken Courses 1 or 3, and 4, 5a, or 6.

ASTRONOMY AND METEOROLOGY.—FIRST SEMESTER.

The Courses in Astronomy and Meteorology should be pursued in the following order: Courses 2 and 8; Course 5; Course 9 or Course 3; Courses 1 and 4 with 10.

FIRST SEMESTER.

1. Theoretical Astronomy. *Five times a week, 3½-4½.* Professor HARRINGTON.

Course 1 should be preceded by Course 11 in Mathematics.

5. Modern Meteorology. *Tuesday and Friday, 4½-5½.* Professor HARRINGTON.

Course 5 must be preceded by an elementary Course in Physics.

EITHER FIRST OR SECOND SEMESTER.

3. Spherical and Practical Astronomy for Civil Engineers. *To count as a two-fifths Course. Hours to be arranged with the instructor.* Mr. SCHAEBERLE.

Course 3 must be preceded by Courses 2, 3, and 6 in Mathematics.

8. Elementary Practical Course. *To count as a one-fifth Course. Hours to be arranged with the instructor.* Mr. SCHAEBERLE.

9. Course for Time, Latitude, and Longitude. *To count as a one-fifth Course. Hours to be arranged with the instructor.* Mr. SCHAEBERLE.

10. Advanced Practical Course. *To count as a one-fifth Course. Hours to be arranged with the instructor.* Mr. SCHAEBERLE.

For Courses 8, 9, and 10, a general knowledge of Astronomy and some knowledge of Trigonometry are requisite.

SECOND SEMESTER.

2. General Astronomy. *Monday, Wednesday, and Friday, 3½-4½.* Professor HARRINGTON.

4. Theoretical Astronomy. *Five times a week, 4½-5½.* Professor HARRINGTON.

Course 4 should be preceded by Course 11 in Mathematics.

XII. MINERALOGY AND GEOLOGY.

MINERALOGY.—FIRST SEMESTER.

1. Short Course. Lectures and practical work. Lectures, *Monday and Friday, Sec. I., 9-10; Sec. II., 10-11.* Practical work, *twice a week. Hours to be arranged with the instructor.* Professor PETTEE.

For Course 1 an elementary knowledge of Chemistry is desirable.

3. Advanced Course. *Hours to be arranged with the instructor.* Professor PETTEE.

Course 3 must be preceded by Course 2. It may also be taken in the second semester.

SECOND SEMESTER.

2. Mineralogy and Lithology. *Five times a week, 7¼-10.* Professor PETTEE.

Course 2 can be taken only by those who are taking, or have taken, a Course in Analytical Chemistry.

GEOLOGY.—FIRST SEMESTER.

1. Elements of General Geology. The Earth's surface and the constitution of its crust. Erosion, sedimentation, changes of level, mountain-making, geological dynamics, the history of life and the grand succession of Geological Events. Part I. Facts and Doctrines. *Monday and Wednesday, 2½-3½.* Professor WINCHELL.
2. Oral Exercises. Supplementary to Course 1, and parallel with it; being a review with exercises on the geological map, and in various specific geological problems. *Friday, 2½-3½.* Professor WINCHELL.

Course 2 is intended to accompany Course 1; it may be taken, however, by any person already acquainted with the elements of Geology.

3. Advanced Geology and Palæontology. Lectures, reading, and museum study. *Tuesday and Thursday, 2½-3½.* Professor WINCHELL.

Course 3 is intended for students who have taken Course 1, or who enter the University with thorough preparation in the elements of Geology.

4. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Five times a week, 1½-3½.* Professor WINCHELL.
8. Economic Geology. *Monday and Wednesday, 2½-3½.* Professor PETTEE.

Course 8 must be preceded by Course 2 in Mineralogy.

9. Geology of the United States. *Tuesday and Thursday, 3½-4½.* Professor PETTEE.

SECOND SEMESTER.

5. Elements of General Geology. Part II. Theories. *Monday, 2½-3½.* Professor WINCHELL.

Course 5 can be taken only by those who have had Course 1, or an equivalent.

6. Oral exercises, parallel with Course 5. *Friday, 2½-3½.* Professor WINCHELL.

Course 6 is intended to accompany Course 5.

7. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Five times a week, 1½-3¼.* Professor WINCHELL.

Course 7 is intended for students aspiring to proficiency in Geology: it must be preceded by Course 1 and also by Courses 1 and 2 in Zoölogy.

XIII. BIOLOGICAL SCIENCES.

ZOÖLOGY.—FIRST SEMESTER.

1. Systematic Zoölogy (introductory). Lectures. *Five times a week, 7¼-8¼.* Professor STEERE.
6. Vertebrate Dissections. Laboratory work. *Five times a week, afternoons.* Mr. REIGHARD.

Course 6 must be preceded by Course 3.

7. Conchology, with identification of North American species. Laboratory work. *Wednesday and Friday, two hours each day, between 9 and 12.* Professor STEERE.

Course 7 must be preceded by Courses 1 and 2.

8. Advanced work in the study of Vertebrates. Laboratory work. *Five times a week, two hours each day, forenoons.* Professor STEERE.

Course 8 must be preceded by Course 4, and is open only to students who have shown special proficiency in Zoölogy.

9. Histology of Vertebrates. Recitations and Laboratory work. Text-book: Schaefer's *Essentials of Histology*. Recitations, *Monday, 2½-3¼*; Laboratory work, *four hours a week, afternoons, to be arranged with the instructor.* Mr. REIGHARD.

SECOND SEMESTER.

2. Elements of Biology (Animal Life). Recitations and Laboratory work. Recitations, *Monday and Wednesday, 1½-2½*; Laboratory work, *six hours a week, afternoons, to be arranged with the instructor.* Text-book: Brooks's *Zoölogy*. Mr. REIGHARD.

Course 2 in Zoölogy and Course 7 or 7a in Botany constitute a connected Course in Elementary Biology, continuing through the year.

3. Comparative Anatomy and Physiology. Lectures. *Five times a week, 7¼-8¼.* Professor STEERE.

4. Identification and special study of Vertebrates. Lectures and Laboratory work. Lectures, *Monday and Wednesday*, 9-10; Laboratory work, *Tuesday, Thursday, and Friday*, two hours each day, *between 9 and 12*. Professor STEERE.

Course 4 must be preceded by Course 1 or by Course 3, and by Course 9.

5. The Structure and Classification of Insects (introductory). Lectures and Laboratory work. Lectures, *Tuesday*, 9-10; Laboratory work, *Monday and Wednesday*, two hours each day, *afternoons*. Mr. REIGHARD.

Course 5 must be preceded by Courses 1 and 2.

10. Embryology. Text-book and Laboratory work. *Five times a week. Hours to be arranged with the instructor*. Mr. REIGHARD.

Course 10 must be preceded by Courses 6 and 9, or equivalents.

BOTANY.—FIRST SEMESTER.

1. Cryptogamic Botany. Study of Fungi. Laboratory work with reading. *Five times a week, forenoons*. Professor SPALDING.

Course 1 must be preceded by Course 7.

2. Structural and Pharmaceutical Botany. *Five times a week*. Lecture, *Friday*, 10-11; Laboratory work, *Monday, Tuesday, Wednesday, and Thursday, forenoons*. Mrs. STOWELL.

- 2a. Advanced Course. Microscopical Detection of Adulterations in Foods and Spices. *Twice a week. Hours to be arranged with the instructor*. Mrs. STOWELL.

7. Elements of Biology (Plant Life); a study of typical species of plants with reference to structure, physiology, and development. *Three times a week*. Lectures, *Tuesday and Friday*, 9-10; Laboratory work, *once a week, forenoons*. 7a. The same as Course 7, with the addition of Laboratory work *twice a week, to count as one Full Course*. Professor SPALDING.

Course 7 or 7a in Botany and Course 2 in Zoölogy constitute a connected Course in Elementary Biology, continuing through the year.

SECOND SEMESTER.

1. Structural Botany and Microscopy. *Five times a week*. Lecture, *Friday*, 10-11; Laboratory work, *Monday, Tuesday, Wednesday, and Thursday, forenoons*. Mrs. STOWELL.

- 3a. Advanced Structural Botany and Microscopy. *Ten hours of Laboratory work and reading. To count as one Full Course. Hours to be arranged with the instructor*. Mrs. STOWELL.

Course 3a must be preceded by Course 2 or by Course 3.

- 3b. Comparative Vegetable Histology. *Ten hours of Laboratory work. To count as one Full Course. Hours to be arranged with the instructor.* Mrs. STOWELL.

Course 3b must be preceded by Course 3.

6. Special Course for advanced students. a. *Three times a week. b. Twice a week. Hours to be arranged with the instructor.* Professor SPALDING.
9. General Lectures, followed by exercises in the analysis and description of flowering plants. *Monday, Wednesday, and Friday, 11-12, after the spring recess, to count as a two-fifths Course.* Professor SPALDING.

HISTOLOGY AND MICROSCOPY.

The Courses in Histology and Microscopy are omitted in 1886-87.

PHYSIOLOGY.—FIRST SEMESTER.

1. Animal Physiology. Experimental lectures and recitations. Lectures, *Monday and Wednesday, 11-12; Recitation, Friday, 11-12.* Professor SEWALL.

Course 1 must be preceded by Course 2 or Course 10 in Physics and by Course 2 in General Chemistry.

SECOND SEMESTER.

2. Continuation of Course 1. Experimental lectures and recitations. Lectures, *Monday and Wednesday, 11-12; Recitation, Friday, 11-12.* Professor SEWALL.

XIV. DRAWING.

FIRST SEMESTER.

1. Geometrical Drawing. *Monday and Wednesday, 1½-3½.* Assistant Professor DAVIS.
2. Topographical Drawing, Lettering, and Ornamentation. *Tuesday and Thursday, 9-11.* Professor DENISON.
3. Mechanical Drawing. *Tuesday, Thursday, and Friday, 1½-3½.* Assistant Professor DAVIS.
4. Free-hand Drawing; Sketching; Pen and Ink Drawing. *Monday, Wednesday, and Friday, 9-12.* Professor DENISON.
9. Sketching of parts of machines. Lettering. *Monday, Wednesday, and Friday, 9-12.* Professor DENISON.

Course 9 is intended especially for students in Mechanical Engineering.

10. Continuation of Course 8. *Twice a week. Hours to be arranged with the instructor.* Professor DENISON.

11. Free-hand Drawing from the Cast. *Twice a week. Hours to be arranged with the instructor.* Professor DENISON.

Course 11 must be preceded by Courses 4 and 7.

13. Water Color Drawing. *Three times a week. Hours to be arranged with the instructor.* Professor DENISON.

Course 13 must be preceded by Course 8.

SECOND SEMESTER.

5. Descriptive Geometry. *Monday, Wednesday, and Friday, 7¼-10.* Assistant Professor DAVIS and Professor DENISON.

Course 5 must be preceded by Course 1.

6. Shades, Shadows, and Perspective. *Monday, Wednesday, and Friday, 9-12.* Professor DENISON.

Course 6 must be preceded by Course 5.

7. Free-hand Drawing (advanced). *Monday, Wednesday, and Friday, 9-12.* Professor DENISON.

8. Architectural and Water Color Drawing. *Tuesday and Thursday, 9-11.* Professor DENISON.

12. Continuation of Course 11. *Twice a week. Hours to be arranged with the instructor.* Professor DENISON.

14. Charcoal Drawing. *Three times a week. Hours to be arranged with the instructor.* Professor DENISON.

Course 14 must be preceded by Course 7.

XV. SURVEYING.

FIRST SEMESTER.

1. Surveying; Use of Transit and Level. *Monday, Wednesday, and Friday, 7¼-12.* Assistant Professor DAVIS.

2. Surveying with Compass; Solar Compass; U. S. Surveys. *Tuesday and Thursday, 7¼-12.* Assistant Professor DAVIS.

Courses 1 and 2 presuppose a knowledge of Plane Trigonometry.

5. Use of Instruments. *Hours to be arranged with the instructor. To count as a one-fifth Course.* Assistant Professor DAVIS.

Course 5 is intended especially for students in Mechanical Engineering.

SECOND SEMESTER.

3. Higher Surveying; Plane Table; Sextant; Earth-work. *Five times a week, 1½-5½.* Assistant Professor DAVIS.

Course 3 must be preceded by Courses 1 and 2.

4. Field Work. *Four weeks entire, 8-12 and 1-5.* Assistant Professor DAVIS.

Course 4 is open only to students that are, or are intending to become, candidates for a degree for a Course in Engineering.

XVI. ENGINEERING.

CIVIL ENGINEERING.—FIRST SEMESTER.

1. Strength and Resistance of Materials. *Monday and Wednesday, 9-10.* Professor GREENE.

Course 1 must be preceded by Course 11 in Mathematics.

2. Engineering; Theory of Construction. *Friday, 9-10.* Professor GREENE.

Course 2 must be preceded by Course 11 in Mathematics.

- 3a. Graphical Analysis of Structures. *Tuesday and Thursday, 9-10.* Professor GREENE.

Course 3a requires at least a limited knowledge of Statics, and must be preceded by Course 3.

4. Engineering Design. *Daily, three hours a day; to count as one Full Course.* Professor GREENE.

Course 4 accompanies Courses 1 and 2.

5. Mechanism and Machine Drawing. *Tuesday and Thursday, 9-11.* Professor M. E. COOLEY and Professor DENISON.

SECOND SEMESTER.

3. Graphical Analysis of Structures. *Tuesday and Thursday, 10-11.* Professor GREENE.

7. Machine Dynamics. *Tuesday and Thursday, 11-12. First half of the semester; to count as a one-fifth Course.* Professor M. E. COOLEY.

Course 7 is the same as the first half of Course 6 in Mechanical Engineering.

8. Engineering; Theory of Construction. *Monday, Tuesday, Thursday, and Friday, 9-10.* Professor GREENE.

9. Hydraulics; Water Supply and Sewerage. *Wednesday, 9-10.* Professor GREENE.

10. Stereotomy. *Tuesday and Thursday, 9-11.* Professor DENISON.

Course 10 must be preceded by Course 5 in Drawing.

MECHANICAL ENGINEERING.—FIRST SEMESTER.

2. Shop Practice in Forging. *Tuesday and Thursday, two hours each day, forenoons or afternoons, to count as a two-fifths Course.* Mr. TAYLOR.

6. Mechanism and Machine Drawing. *Tuesday and Thursday, 9-11, and additional work in Drawing, to count as a three-fifths Course.* Professor M. E. COOLEY and Professor DENISON.

Course 5 must be preceded by Course 10 or 10a in Mathematics, and by Courses 1 and 5 in Drawing.

7. Prime Movers; Water Wheels and Steam Engines. *Tuesday and Thursday, 10-11.* Professor M. E. COOLEY.

Course 7 must be preceded by Course 6.

8. Theory of Machine Construction. *Friday, 11-12.* Professor M. E. COOLEY.

Course 8 should be accompanied by Course 1 in Civil Engineering.

9. Machine Design. *Daily, three hours a day; to count as one Full Course.* Professor M. E. COOLEY.

Course 9 should be accompanied by Course 8.

EITHER FIRST OR SECOND SEMESTER.

1. Shop Practice in Wood Work and in Pattern Work. 1a. Continuation of the same for advanced students. *Monday, Wednesday, and Friday, 9-12. To count as a three-fifths Course.* Mr. TAYLOR.

In the first semester the work in Course 1 is arranged especially to meet the wants of students in Mechanical Engineering; in the second semester, of students in Civil Engineering.

4. Shop Practice in Iron Work. 4a. Continuation of the same for advanced students. *Monday, Wednesday, and Friday, three hours a day, between 1½ and 5½. To count as a three-fifths Course.* Mr. TAYLOR.

SECOND SEMESTER.

3. Machinery and Machine Drawing. *Tuesday and Thursday, 7¼-10.* Professor M. E. COOLEY and Mr. TAYLOR.

Course 3 must be preceded by Courses 1 and 9 in Drawing.

6. Machine Dynamics; Thermodynamics. *Tuesday and Thursday, 11-12.* Professor M. E. COOLEY.

Course 6 must be preceded by Course 11 in Mathematics, and by Course 10 in Physics.

10. Machine Construction and Mill Work. *Monday, Tuesday, Thursday, and Friday, 9-11.* Professor M. E. COOLEY.

11. Steam Engineering; Steam Generators; Steam Pumping and Hoisting Machinery; Practical work in the Laboratory. *Monday, Wednesday, and Friday, 1½-4½.* Professor M. E. COOLEY.

Course 11 must be preceded by Course 7.

12. Shop Practice in Foundry Work. *Tuesday and Thursday, three hours each day, between 1½ and 5½.* Mr. TAYLOR.

MINING ENGINEERING.—SECOND SEMESTER.

1. Mining. *Five times a week. Hours to be arranged with the instructor.* Professor PETTEE.

This Course is open only to those who are candidates for the degree of Bachelor of Science for a Course in Mining Engineering.

XVII. METALLURGY.

FIRST SEMESTER.

1. Fuel and Refractory Material, Iron, Steel, Copper, and Zinc. *Three times a week. Hours to be arranged with the instructor.* Professor CHEEVER.

Course 1 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

SECOND SEMESTER.

2. Lead, Silver, Gold, Mercury, and other Metals. *Twice a week. Hours to be arranged with the instructor.* Professor CHEEVER.

Course 2 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

XVIII. MUSIC.

FIRST SEMESTER.

1. Science and Practice of Choral Music. *Tuesday, Thursday, and Friday, 4½-5½. To count as a two-fifths Course.* Professor CADY.

No previous knowledge of Music is required for admission to Course 1; but, as many persons do not have the aptitude for the successful pursuit of the study, those wishing to take the Course *must first satisfy the instructor that they can do so with profit.*

2. Science of Harmony. *Tuesday and Friday, 9-10.* Professor CADY.

Course 2 must be preceded by Course 1 or its equivalent; and sufficient technical ability to play a common hymn tune on the piano or organ will also be required.

6. Simple Counterpoint. *Monday and Thursday, 10-11.* Professor CADY.

Course 6 must be preceded by Courses 2 and 4.

8. Science of Harmony. *Tuesday and Friday, 10-11.* Professor CADY.

Course 8 must be preceded by Courses 2 and 4, and may be taken in connection with Course 6, or it may be taken in the second semester. It will not be offered, however, in *both semesters.*

10. Counterpoint. *Monday and Thursday, 9-10.* Professor CADY.

SECOND SEMESTER.

3. Science and Practice of Choral Music. *Tuesday, Wednesday, and Friday, 4½-5½.* To count as a two-fifths Course. Professor CADY.

Course 3 must be preceded by Course 1 or an equivalent.

4. Science of Harmony. *Monday and Thursday, 9-10.* Professor CADY.
11. Imitation. Canon. Choral Vorspiel. *Hours to be arranged with the instructor.* Professor CADY.

XIX. BIBLIOGRAPHY.

FIRST SEMESTER.

Lectures designed to aid readers in the use of the library, and in gaining a knowledge of recent books. *Monday evening, 7-8, during the month of October.* Mr. R. C. DAVIS.

Attendance upon these lectures will not be counted as meeting the requirements for a degree.

SECOND SEMESTER.

1. Historical, Material, and Intellectual Bibliography. Lectures. *Wednesday, 2½-3½.* Mr. R. C. DAVIS.

III. REQUIREMENTS FOR GRADUATION.

I. THE BACHELORS' DEGREES.

A. GRADUATION ON THE CREDIT SYSTEM.

Under the Credit System, the Faculty recommend for graduation students who have completed a stated number of *Full Courses* of study, according to the requirements specified below,—a part being prescribed and a part being chosen by the student. A *Full Course* of study comprises five exercises a week during a semester, whether in recitations, laboratory work, or lectures. It is not essential that the exercises constituting a *Full Course* shall be in one and the same branch of study. Thus, a part (two for instance) may be in Mathematics, a part (say two) in Greek, and a part (say one) in Latin, making a total of five.

The Degree of Bachelor of Arts.

To obtain the recommendation of the Faculty for the degree of *Bachelor of Arts*, the student must complete *twenty-four Full Courses*. The prescribed portion of this work is as follows:

In Greek; Courses 1, 3, 6, 13, and a four-fifths Course in tragedy.

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 2, 6, 10, 12, 14, 15. *

In French; Courses 1, 5.

In English; Courses 1 or 7, and 2 or 8.

In Philosophy; Course 1 or 3.

But after a student has completed Courses 1, 6, and 13 in Greek, 1 and 6 in Latin, and 10, 12, 14, and 15 or an equivalent in Mathematics, he may, at his option, discontinue the study of any one of these three subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-four Full Courses*.

The Degree of Bachelor of Philosophy.

To obtain the recommendation of the Faculty for the degree of *Bachelor of Philosophy*, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 2, 6, 10, 12, 14, 15. *

In French;—(a), for those who entered *without* French, Courses 1, 5, and one and three-fifths Full Courses in advanced work;

or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German;—(a), for those who entered *without* German, Courses 1, 3, and one and three-fifths Full Courses in advanced work;

or (b), for those who entered *with* German, one and three-fifths Full Courses in advanced work.

In English; Courses 1 or 7, and 2 or 8.

In Philosophy; Course 1 or 3.

But after a student has completed Courses 1 and 6 in Latin, 10, 12, 14, and 15 or an equivalent in Mathematics, and 1 and 3 in German (if he entered without German) or 1 and 5 in French (if he entered without French), he may, at his option, discontinue the study of Latin, of Mathematics, or of the modern language (French or German) which he began in the University. From the other courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

* Instead of these Courses the student is permitted to take other Courses in Mathematics of equivalent amount.

The Degree of Bachelor of Science (in General Science).

To obtain the recommendation of the Faculty for the degree of *Bachelor of Science*, for the Course in General Science, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 10, 12, 14, 15, or an equivalent.

In French; (a), for those who entered *without* French, Courses 1, 5; or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German; (a), for those who entered *without* German, Courses 1, 3; or (b), for those who entered *with* German, one and three-fifths Full Courses in advanced work.

In English; Courses 1 or 7, and 2 or 8.

In Philosophy; Course 1 or 3.

In Physics; one Full Course.

In General Chemistry; one Full Course.

In Zoölogy or in Botany; one Full Course.

In Physical Sciences or in Biological Sciences; five Full Courses.

In addition to these the student must choose and complete from the other Courses offered enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in Chemistry).

The requirements for the degree to be given on completion of the course in Chemistry may be found on pages 85 and 86.

The Degree of Bachelor of Science (in Biology).

The requirements for the degree to be given on completion of the course in Biology may be found on pages 86 and 87.

The Degree of Bachelor of Science (in Civil, Mechanical, or Mining Engineering).

The requirements for the degree to be given on completion of the courses in Engineering may be found on pages 82 to 84.

The Degree of Bachelor of Letters.

To obtain the recommendation of the Faculty for the degree of *Bachelor of Letters*, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics: Course 10 or 10a.

In French: Courses 1, 5, and one and three-fifths Full Courses in advanced work.

In German: Courses 1, 3, and one and three-fifths Full Courses in advanced work.

In English: Courses 1 or 7, 2 or 8, 4, 9.

In History: Courses 1, 7, 9, or other Courses equivalent in amount.

In Philosophy: Course 1 or 3.

But after a student has completed Courses 1 and 5 in French and 1 and 3 in German, he may, at his option, discontinue either of these two subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

B. GRADUATION ON THE UNIVERSITY SYSTEM.

Admission of Undergraduates.

1. The privileges of the University System are open to undergraduates who have completed their second year of residence, and have also completed at least twelve Full Courses, including all the prescribed work—offered in the first two years—for some one of the Bachelors' degrees.

Conditions for Entering Upon the Work.

2. Before beginning his work each undergraduate student must make application to the Secretary of the Faculty and receive from him a certificate that he is entitled to enter upon the work. This application must be made before the student enters on the work of his third year of collegiate residence. In cases of exceptional character, however, the Faculty may grant admission to begin work on the University system at a later date.

Nature of the Work.

3. Students who are working on the University System are not held to the completion of a fixed number of courses, but will be required to pursue three distinct lines of study, one "*major study*" and two "*minor studies*," and, at the close of the work, to pass a special examination on those studies. The committee in charge of any undergraduate's work may, however, at their option, accept, in lieu of the final examination in a minor study, approved work, in the line of that study or germane to it, done on the credit system, equivalent to one-fourth of the amount of work the student would have been obliged to complete before graduation, if he had continued on the credit system.

Supervision of the Work.

4. The work of students carrying on their studies under the University System will be supervised by committees of the Faculty. To carry this provision into effect, ten members of the Faculty have been chosen as chairmen of such committees. The other members of the committee in each case consist of the instructors in charge of the student's work. On making his application to the Secretary of the Faculty each student will be directed to the chairman of the proper committee.

Attendance.

5. Students on the University System are subject to all the rules of this Department relating to attendance and to examinations. No student can be excused from any work that he has once entered upon, nor from any examination, without the consent of the instructor in charge of the work. Examinations passed at the close of each semester on ordinary class work shall not count as an equivalent or in abatement of the final examination to be passed for a degree, except as provided above in paragraph 3.

Bachelors' Degrees.

6. Undergraduates who have been enrolled as candidates under the University System for at least three semesters, may be admitted to a special examination for a Bachelor's degree at a date not earlier than the end of three and a half years of residence at the University. The examination will be conducted by the regular committee and such other persons as they may ask to assist them. Before being recommended for any Bachelor's degree, however, they must have completed all the courses prescribed for that degree.

II. THE HIGHER DEGREES.

Candidates for Higher Degrees will pursue their studies on the University system, described above. But for the Master's degree a course of study may at the discretion of the Faculty be approved, which does not confine the work rigorously to one major and two minor studies.

I. THE MASTERS' DEGREES.

The Masters' degrees are open to Bachelors of this University, or of any other reputable university or college; a residence of at least one year at the University is required, except as stated below.

1. *Residents*.—Those who have received a Bachelor's degree at this University, or at any other reputable university or college, may be recommended for the corresponding Master's degree after a year's residence at the University, provided they pass examination on an approved course of study, (see paragraph 3 on page 70), and present a satisfactory thesis.

N. B. Students properly qualified may be permitted to pursue at the same time studies for a master's degree, and studies in any of the professional schools, on condition that the term of study and residence in this Department be extended to cover two years instead of one.

2. *Non-Residents*.—A Bachelor of Arts, Bachelor of Science, Bachelor of Philosophy, or Bachelor of Letters, of this University, who has not resided here since graduation, may be recommended for the corresponding Master's degree, provided he spends at least two years on a course of study approved by the Faculty, passes the required examinations, and presents a satisfactory thesis. *This privilege is restricted to graduates of this University.*

II. THE DOCTORS' DEGREES.

1. The Doctors' degrees shall be conferred only on persons who have previously received a Bachelor's degree, either here or at some other reputable university or college, and also during residence here have made special proficiency in some one branch of study, and good attainments in two other branches, and have presented a thesis that shall evince the power of research and of independent investigation. It is not intended that the Doctors' degrees shall be won merely by faithful and industrious work for a prescribed time in some assigned course of study, and no definite term of required residence can be specified; but it is the practice of the University to require at least one full year of residence of candidates that have already earned a Master's degree, and at least two full years of candidates that have previously taken only a Bachelor's degree.

2. The degree of Doctor of Philosophy shall be open to persons that have received the degree of Bachelor of Arts, or of Bachelor of Philosophy; the degree of Doctor of Science to persons that have received the degree of Bachelor of Science; and the degree of Doctor of Letters to persons that have received the degree of Bachelor of Letters.

III. THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The requirements for these degrees may be found on page 84.

IV. SPECIAL REGULATIONS.

1. Applicants for an advanced degree, whether resident or non-resident, are required to announce to the Faculty, through the President, as early as the fifteenth of October of each year, the particular branches of study to which they wish to give special attention. The supervision of their work will then be entrusted to the proper committee.

2. The subject of the thesis must be announced to the President as early as the first of December of the college year in which the applicant expects to take the degree.

3. It is required in the case of a resident applicant that, so far as the resources of the University permit, the thesis be upon a subject requiring research. The thesis of a non-resident applicant must also be upon a subject requiring independent research, if possible.

4. The thesis must be completed and put into the hands of the chairman of the proper committee as early as the first of May of the year in which the applicant expects to take the degree.

5. The thesis must be prepared for close scrutiny with reference not only to its technical merits, but also to its merits as a specimen of literary workmanship. It must be preceded by an Analytical Table of Contents, and a carefully prepared account of the authorities made use of.

6. The thesis must be read and defended in public at such time as the Faculty may appoint; and, in the case of a Master's degree, a bound copy, either written or printed, must be deposited in the University Library.

7. Candidates for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Letters, in case of the acceptance of their theses are also required to have the accepted theses printed, and to present twenty-five copies of the same to the library of the University, unless by special vote of Faculty a smaller number is deemed sufficient.

IV. FURTHER DESCRIPTION OF COURSES IN TECHNOLOGICAL AND PROFESSIONAL STUDIES.

Although there is not here a separate organization of a School of Technology, instruction is given in the branches pursued in such a school. Accordingly we here add fuller statements than are given above concerning the technological courses, and also statements of special interest to those who desire to pursue extended studies in the physical and biological sciences, or to prepare themselves for the profession of teaching. The pharmaceutical courses are described in the chapter on the School of Pharmacy.

I. ENGINEERING.

The University is now better prepared than ever before to give complete courses of instruction in all branches of engineering, civil, mechanical, and mining. It offers to persons that wish to become professional engineers thorough courses of study extending over about four years. In these courses of study, the aim of the University is to lay a foundation of sound theory, sufficiently broad and deep to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession; and at the same time to impart such a knowledge of the usual practice of an office, and of an engineering party, as shall make its students useful in any position to which they may be called. While the adaptation of theory to practice can be thoroughly learned only by experience, there are many matters in which the routine work of an engineering field party, office, or drafting room can be carried out on a greater or less scale in a training school.

In *Civil Engineering* all the technical branches are under the direct care of those who have had professional experience as well as a full scientific training, and in all particulars the course embodies as close an imitation of the requirements of active labor as the instructors who have the several branches in charge can devise.

In *Mechanical Engineering* the course of study, though to some extent parallel with that in civil engineering, includes a wide range of special studies. Prominence is given to the study of steam engineering, and in this branch a large amount of practical work is done. The instruction is arranged to accommodate those

who wish to devote their time principally to mechanical engineering proper, to steam engineering, or to marine engineering and naval architecture.

In *Mining Engineering and Metallurgy* the course of instruction, which is intended to cover about four years of study, includes a part of that provided for students in civil and in mechanical engineering, though more especial attention is paid in the latter part of the course to mineralogy, geology, and chemistry. The instruction in the technical branches is arranged so as to meet the wants, both of those whose purpose it is to confine their professional work more closely to metallurgy and of those who intend to engage in the practice of mining and metallurgy combined.

REQUIREMENTS FOR ADMISSION.

Candidates for a degree in any of the courses in engineering must pass examinations for admission as follows:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 30).
2. HISTORY AND NATURAL PHILOSOPHY.—In both, the same as for the degree of Bachelor of Science (see page 33).
3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 35).
4. CHEMISTRY, GEOLOGY, ZOÖLOGY, AND PHYSIOLOGY.—In any two of these subjects (see page 34).

Students not candidates for a degree may be admitted to pursue such studies as they prefer, provided they are found prepared to join the classes in these studies. They will be expected to attend all the lectures, recitations, and examinations in the branches prescribed for the regular students, and will be required to take enough work to occupy them profitably.

COURSES OF INSTRUCTION.

The studies pursued in the earlier parts of the course, common to all students in engineering, will comprise, in *Mathematics*, algebra, geometry, plane and spherical trigonometry, general geometry, and the elements of differential and integral calculus; in *French and German*, an amount covering in all about two years of study; in *English*, a course in higher English grammar and composition; in *Physics* and *General Chemistry*, the study of the elementary principles; and in *Drawing*, practice in geometrical and in mechanical drawing, and in the study of descriptive geometry.

The more technical subjects are taken up in the latter part of the course. Some of these subjects are of equal value to all classes of engineering students, such as analytical and applied mechanics, the strength and resistance of materials, and the metallurgy of the useful metals, especially iron and steel; others are adapted more particularly to the wants of the special students in the several courses. Their general scope may be seen from the following descriptive outline.

1. *Drawing*.—A very complete course in mechanical drawing is given, embracing plane projection drawing, isometric drawing, descriptive geometry, and the elementary principles of coloring and shading, with original problems executed in the drawing room. Examples from numerical data are always given in all branches, and copying from the flat is avoided. Students of mechanical engineering are required to sketch pieces of machinery, and afterwards to make working drawings suitable for use in the shop. Problems peculiar to mining practice are also given. The plans of surveys, plane-table work, maps, designs in engineering construction, and the thesis drawings naturally come under this head. Instruction is also given in free hand drawing, topographical drawing, ornamentation and lettering, shades and shadows, linear perspective, and drawing for stone cutting. The work in drawing occupies the student a part of almost every day throughout the course.

2. *Surveying*.—The work in surveying combines theory and practice. A course of lectures and text-book work, in daily exercises, covers so much of one year as is not given to field work; the theory of instruments, and all the operations of surveying, laying out work, and computing, are explained in detail. Every student is afforded abundant opportunity for becoming familiar, by actual use, with the excellent and full assortment of instruments owned by the University, embracing those usually employed in actual work, and numbering enough to equip well the parties. The classes in surveying are drilled in all the field-work that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide areas, and solve problems in heights and distances from data taken by themselves. They also determine the meridian, and take observations for latitude. This work is done during the fall months; the finished plans of the surveys are made during the winter.

The classes in railroad engineering have practice in running levels and curves of different kinds, and in the measurement of earth-work. In the month of June they are taken into the field as a railroad party, for a space of four weeks continuously, where, under competent supervision, they go through all the field work for a projected line; doing all the work up to the point of actual construction, such as reconnoissance, preliminary and location survey, cross-sectioning, staking out, contouring, and topography. A plan and profile, carefully made in the field by the students from the notes of the party, complete this portion of the subject, and serve to fix the practical application of the principles obtained from the text-books and lectures. In the above work are usually included a plane-table survey, triangulation, and some hydrography when the selected locality is favorable.

The principle text-books used in this work are Johnson's Surveying, Searle's Field-Book for Engineers, and Rankine's Civil Engineering.

3. *Theory of Structures*.—The study of the strength of materials and the theory of construction covers a course of recitations and lectures for an entire year. The text-book used is Rankine's Manual of Civil Engineering, supplemented with full explanations, additional lectures, examples, and problems.

A complete course of instruction is also given in the graphical analysis of roof and bridge trusses and arches, as recently developed and applied. The student is made familiar with both the analytical and graphical methods of treatment, and thus possesses ready proof of the accuracy of his calculation.

4. *Machinery, Prime Movers, and Millwork*.—A course of instruction is given in mechanism, or the general principles of machinery, involving the study of gearing, cams, screws, cranks, and levers, and the dynamics of machinery. In the study of prime movers special attention is given to turbine and other water wheels, and to steam, gas, and air engines. In the theory of machine construction, problems involving the strength and design of machines, and the materials used in their construction are studied at length, in connection with such examples as illustrate the best practice. The instruction in millwork covers the distribution of power and the arrangement of shafting and machinery as found in leading

manufacturing establishments. Practical problems involving the strength of shafting, belting, and gearing, are fully treated. Tests are made to determine the efficiency of machines, and the value of lubricants.

5. *Designs in Engineering and in Machine Construction.*—Contemporaneously with the study of theory students are required to work out problems in design. They are furnished with the usual data for a design, and the kind or type of structure or machine will be indicated. They are then expected to make the necessary calculations, paying particular attention to proportioning the different parts so as to secure strength, simplicity, and effect, and to present, at a specified date, complete working drawings, giving full details, accompanied by bills of materials, estimates, and specifications.

6. A course in *Thermodynamics* embraces the study of the principles governing the action of heat engines in general.

7. *Steam Engineering.*—The work in this branch covers the practical use of steam. Furnaces and boilers are studied with reference to proper combustion of fuel, to securing maximum evaporative efficiency, and to proportioning the parts for strength, durability, and accessibility for cleaning and repairs. The care and management of engines and boilers, both in use and out of use, are fully considered. A study is made of the principal steam pumps and pumping engines. The practical application of steam to heating and ventilating purposes is treated by lectures, and by inspection of actual plants. Tests are made to determine the value of fuels, quality of steam, and the efficiency of furnaces, boilers, and engines.

8. *Laboratory Work.*—The Laboratory courses in mechanical engineering embrace the experimental courses in the Mechanical Laboratory, and the practical courses in the various work-shops. Instruction is given in the principles governing the action of cutting tools and the principal machines and hand tools used in the shop. Lectures are given on pattern making, moulding, and founding, covering the principal features of each.

The *Shop Practice* covers the application of principles previously studied. It comprises the actual manipulation of the tools used in working metal and wood, and in moulding. The student

is required to do work in pattern making, and moulding in green sand, in dry sand, and in loam, and will charge and have the management of the cupola and brass furnace during the operations of casting. Careful attention is given to the operations of founding and to making composition metals for specific purposes. The student is also required to put in practice, at the blacksmith's forge, his knowledge of the elementary principles of forging, and to forge and temper his own cutting tools. By working with iron and steel of different qualities the student becomes familiar with all grades of those materials. Practice is also afforded in soldering, brazing, and steam-fitting.

9. *Marine Engineering and Naval Architecture*.—The instruction in this branch comprises the study of marine engines and propelling instruments, and a course of lectures on the nature of the resistance of ships, the computation of augmented surface, probable resistance, the power necessary to secure a given speed, buoyancy, stability, wave motion, steadiness, determination of center of gravity and metacentre, causes of rolling, causes of stability, and other topics.

The principal text-books and books of reference used in the work in mechanical engineering are Holtzapfel's *Mechanical Manipulation*, Shelley's *Workshop Appliances*, Spretson's *Casting and Founding*, Rankine's *Steam Engine*, Northcott's *Steam Engine*, Rankine's *Machinery and Millwork*, Zeuner's *Valve Gears*, Wilson's *Steam Boilers*, Unwin's *Elements of Machine Design*, Good-eve's *Elements of Mechanism*, Thearle's *Theoretical Naval Architecture*, Seaton's *Marine Engineering*.

10. *Economic Geology*.—Particular attention is paid to the geology of mines and mineral districts, and to the modes of occurrence and distribution of mineral substances that have an economic or commercial importance.

11. *Mining*.—In this branch the instruction is given mainly by lectures. The machines in use at the best mines are described, and the mutual relations of parts explained and illustrated with the aid of plates and diagrams. The different operations connected with the discovery, opening, development, and working of mines are all studied in their proper order.

12. *Metallurgy*.—A complete course of instruction by lectures and recitations is given upon the subjects of fuel, refractory material, iron and steel, copper, zinc, lead, gold, silver, and other metals, extending over an entire year. The lectures are illustrated by charts and drawings of furnaces and appliances used, and by samples of furnace products. In connection with this course of study, the student is required to work out problems in heat, furnace construction, ore mixtures, blast furnace slags, and blast engines, and to write out the chemical reactions that take place in the different metallurgical operations. Certain days are devoted to laboratory work, and the student is required to determine by actual tests the heating value of different fuels, to make tests of fire-proof material, and, from data and material furnished, to produce slags whose composition shall correspond to a given formula.

13. *Visits of Inspection*.—As often as may be practicable, visits will be paid to the neighboring manufacturing establishments, for the purpose of acquiring a knowledge of the methods employed in building, and in the construction of bridges, machinery, and ships. In the spring of 1886, members of the classes in civil and mechanical engineering spent a week, under the guidance of Professor M. E. Cooley, in visiting industrial works at Detroit, Cleveland, and Pittsburg.

FACILITIES FOR INSTRUCTION.

The collections for illustrating the instruction given comprise models, drawings, photographs, and lithographs, representing trusses, arches, and details of construction in iron, wood, and stone; also shapes of iron, working models of turbines and engines, and working drawings of a number of bridges. These collections are receiving additions from year to year, by gift and purchase, and are invaluable to the student. Valuable gifts of machinery have been received during the past three years aggregating nearly \$4,000 in value.

The Mechanical Laboratory (see page 25) is a large and well lighted room containing the apparatus and machinery necessary to carry out a variety of experiments. It is not only a laboratory for experiment, but also for research in technical subjects; and it is open to graduates and others desiring to seek data which may form the basis of theses.

Tests of engines and boilers, and of machinery in general, will be made on request, and the profits of such work will be devoted to extending the facilities of the laboratory. The data of all experiments and tests made will be kept in the record books of the laboratory.

The Iron Room occupies the first floor of the new building and is fitted up with the usual machine and hand tools found in a first class shop. The Wood Room and Pattern Shop occupy the second floor, and are also well equipped with tools. The Forge Shop, 24 ft. by 36 ft., is fitted with six complete sets of tools, forges, and anvils, and power blast. The foundry, 24 ft. by 36 ft., contains an 18-inch cupola, an excellent brass furnace, and the usual facilities for moulding.

All of the laboratory work is on a practical basis, and is done as nearly as possible as it would be done in any well arranged manufacturing establishment. There is also a large and convenient metallurgical laboratory connected with the chemical laboratory, amply supplied with assay furnaces and other appliances such as are usually found in laboratories of this description. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all; and frequent references are made to them in the class-room as the various subjects are brought forward.

EXAMINATIONS.

Examinations, usually in writing, are held at the end of each semester, but the classes are liable to be examined at any time, without notice, on any portion of their previous work.

REQUIREMENTS FOR GRADUATION.

Upon the completion of a prescribed course of study, amounting to twenty-five Full Courses,* as given below, and the presentation of a satisfactory thesis, the student receives the degree of Bachelor of Science. The diploma given indicates the line of study pursued.

Bachelors of Arts, of Philosophy, of Science, and of Letters, of this University, and graduates of any other reputable College, will

*For explanation of the term Full Course, see page 67; and for further information in regard to the Courses prescribed for graduation see pages 88 to 97.

be recommended for the same degree with the regular students, after attendance on, and a satisfactory examination in, the technical subjects alone of the several courses. These studies can be completed in two years. The culture imparted by classical or other liberal training will be found to have its uses for one engaged in engineering work, and the previous discipline of the faculties in exact research will enable the professional student to master more easily the requirements of the course. All the time the student can devote to general studies before taking up specialties will be well spent.

The requirements for the several degrees are as follows:

1. *In Civil Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Civil Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Course 3, 10a, 11, 12, 13, 14, 15, 16. (In 1886-87, Courses 1, 5 take the place of Courses 10a, 12, 14, 15.)

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Mineralogy; Course 1.

In Astronomy; Course 3.

In Drawing; Courses 1, 2, 4, 5, 6.

In Surveying; Courses 1, 2, 3, 4.

In Civil Engineering; Courses 1, 2, 3, 3a, 4, 5, 7, 8, 9, 10.

In Mechanical Engineering; Course 7.

These make *twenty-two and one-fifth Full Courses*. From the other courses offered he must choose and complete *two and four-fifths Full Courses*, making *twenty-five Full Courses* in all. He must also prepare a satisfactory thesis.

2. *In Mechanical Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mechanical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 3, 10a, 11, 12, 13, 14, 15, 16. (In 1886-87, Courses 1, 5 take the place of 10a, 12, 14, 15.)

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Mineralogy; Course 1.

In Drawing; Courses 1, 5, 6, 9.

In Surveying; Course 5.

In Civil Engineering; Courses 1, 3, 9.

In Mechanical Engineering; Courses 1 to 12, except 1a and 4a.

In Metallurgy; Course 1.

These make *twenty-two and four-fifths Full Courses*. From the other Courses offered he must choose and complete *two and one-fifth Full Courses*, making *twenty-five Full Courses* in all. He must also prepare a satisfactory thesis.

3. In Mining Engineering.

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mining Engineering, the student must complete one of the two following sets of requirements:

I.

In Mathematics; Courses 3, 10a, 11, 12, 13, 14, 15, 16. (In 1886-87, Courses 1, 5 take the place of Course 10a, 12, 14, 15.)

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Courses 1, 5a, 9, 10.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Surveying; Courses 1, 2.

In Civil Engineering; Courses 1, 3, 5, 7.

In Mechanical Engineering; Course 7.

In Mining Engineering; Course 1.

In Metallurgy; Course 1.

These make *twenty-three and one-fifth Full Courses*. From the other Courses offered he must choose and complete *one and four-fifths Full Courses*, making *twenty-five Full Courses* in all. He must also prepare a satisfactory thesis.

II.

In Mathematics; Courses 10, 12, 14, 15.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Courses 1, 5a, 5a', 5a'', 10, 12.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 3, 5.

In Mechanical Engineering; Courses 1, 2, 4.

In Mining Engineering; Course 1.

In Metallurgy; Courses 1, 2.

These make *twenty-one and two-fifths Full Courses*. From the other Courses offered he must choose and complete *three and three-fifths Full Courses*, making *twenty-five Full Courses* in all. He must also prepare a satisfactory thesis.

REQUIREMENTS FOR THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The conditions on which the degree of Civil Engineer, as a second degree, is conferred, are as follows:

The degree of Civil Engineer may be conferred upon Bachelors of Science of this University who have taken the degree for a course in Civil Engineering, if they furnish satisfactory evidence that they have pursued further technical studies for at least one year, and, in addition, have been engaged in professional work, in positions of responsibility for another year. The first of the above requirements may be satisfied by pursuing at the University, under the direction of the Faculty, a prescribed course of study for an amount of time, not necessarily consecutive, equivalent to a college year. If the candidate does not reside at the University, his course of study must be approved in advance by the Professor of Civil Engineering, and he must prepare a satisfactory thesis on

some engineering topic, to be presented, together with a detailed account of his professional work, one month, at least, before the date of the Annual Commencement at which he expects to receive the degree.

The conditions on which the degrees of Mechanical Engineer and Mining Engineer, as second degrees, are conferred upon Bachelors of Science of this University who have taken the degree for a course in Mechanical Engineering or in Mining Engineering, are analogous in character and in amount to those given above for the degree of Civil Engineer.

II. THE PROFESSIONAL STUDY OF CHEMISTRY.

A course of training is provided, extending through four collegiate years, giving a practical preparation for the pursuit of an analytical and consulting chemist. The work is also adapted to the purpose of teaching, or research in chemical science. After devoting one year mainly to the German and French languages as a basis for their use in scientific literature, and to mathematics as a support for physics and chemistry, the student enters directly upon laboratory practice in analytical chemistry, which extends through the remainder of the course. Qualitative analysis begins with the second year, and quantitative analysis is reached in the second semester of this year. Organic chemistry begins with the third year, in the second semester of which a study of chemical philosophy is taken. Laboratory physics may be taken in the third year. The larger part of the fourth year is to be devoted to original research, both experimental and literary. Manufacturing chemistry is given in the last year.

The requirements for admission into the University, for candidates for the degree of Bachelor of Science in Chemistry, are the same as those for candidates for the Degree of Bachelor of Science in General Science (see pages 32-34).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Chemistry, the student must complete *twenty-six Full Courses*. The prescribed portion of the work is as follows:

In Mathematics; Courses 10 or 10a, 12, 14, 15.

In French; (a), for those who entered *without* French, Courses 1, 4, 5;
or (b), for those who entered *with* French, Course 4.

In German; (a), for those who entered *without* German, Courses 1, 3;
or (b), for those who entered *with* German, Courses 2 or 10, and 11
or 12.

In English; Course 1.

In Drawing; Course 3 or 4.

In Microscopy; Course 2.

In Geology; Courses 1, 9.

In Physics; Course 10.

In General Chemistry; Courses 2, 3.

In Analytical and Organic Chemistry; Courses 1, 2, 4, 5a, 5a, 10, 11.

In Mineralogy; Course 2.

In Chemistry; three Full Courses.

In addition to these the student must choose and complete from the other Courses offered enough to make in all *twenty-six Full Courses*. Among his elective studies he is recommended to take (1) Course 2 in Botany, (2) Course 4 in Physics, or (3) Course 1 in Metallurgy and Course 12 in Analytical Chemistry.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY.

The University curriculum has been altered and enlarged in order to provide a specific course of study for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research.

In the first year, Modern Languages, Mathematics, and Drawing, and in the second year, Elementary Physics and Chemistry are required, as being absolutely essential to the successful prosecution of an extended course in Science. Zoölogy, Botany, and Physiology are the most prominent subjects of the course, but full opportunity is given for extended work in Physics, Chemistry, Palæontology, and other sciences. The laboratories of the University are provided with the necessary facilities not only for ordinary biological work, but for somewhat extended research, and every encouragement will be given to students, especially in the last year, to devote themselves to original investigations.

The requirements for admission into the University, for candidates for the degree of Bachelor of Science in Biology, are the same as those for candidates for the Degree of Bachelor of Science in General Science (see pages 32-34).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Biology, the student must complete *twenty-six* Full Courses. The prescribed portion of this work is as follows:

In Mathematics; Courses 10 or 10a, 12, 14, 15.

In French; (a), for those who entered *without* French, Courses 1, 4, 5.
or (b), for those who entered *with* French, Course 4.

In German; for those who entered *without* German, Courses 1, 3.

In English; Course 1.

In Philosophy; Course 1 or 3.

In Physics; one Full Course.

In General Chemistry; one Full Course.

In Zoölogy; Courses 1, 2, 8, 10.

In Botany; Courses 3, 7.

In Physiology; Courses 1, 2.

In Sanitary Science; Course 1.

In Histology; Courses 2, 3. (In 1886-87, the Courses in Histology are omitted, and Course 9 in Zoölogy takes their place as a prescribed study.)

In addition to these the student must choose and complete from the other Courses offered enough to make in all *twenty-six* Full Courses.

The following plan of study may serve to guide students in arranging the prescribed portion of their work, and also to indicate some of the subjects recommended for electives.

FIRST YEAR. *Prescribed:* Mathematics 10 or 10a, 12, 14, 15; French 1, 5, or French 4 and German 1, 3 (whichever the student is qualified to pursue); English 1, Botany 3; Drawing 4.

Elective: French or German; Mineralogy 1; Geology 1, 2.

SECOND YEAR. *Prescribed:* French 4 (if not previously taken); Philosophy 1 or 3; Physics 10; General Chemistry 2; Zoölogy 1, 2, 9; Botany 7.

Elective: Mathematics 2 or 13, 6 or 16; French or German; Botany 3b, 6.

THIRD YEAR. *Prescribed:* Zoölogy 8, 10; Physiology 1, 2.

Elective: English 2; Physics 4; Analytical and Organic Chemistry 1, 8; Geology 7; Botany 1.

FOURTH YEAR. *Prescribed:* Sanitary Science 1.

Elective: Analytical and Organic Chemistry 4; Zoölogy 4; Special Investigations in Zoölogy, Botany, Physiology, and Histology.

IV. SUGGESTIONS TO STUDENTS PURSUING SPECIAL STUDIES IN SCIENCE.

Students who desire to pursue a special line of study in any of the physical sciences or in geology will observe the importance of taking the elementary Courses early enough to enable them to follow the proper consecutive order in the studies desired. The following schedules of studies in Physics, in Astronomy, and in Chemistry, are given as guides to candidates for any of the Bachelors' Degrees, who wish to pay special attention to those branches of science. The schedule of studies in Geology is somewhat fuller, and is recommended to candidates for the Degree of Bachelor of Science, who desire an education which shall be specially geological.

A. PHYSICS.

First Year. Mathematics 10 or 10a, 12, 14, 15; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 3 or 4, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3 with Mathematics 11 and Mechanical Engineering 6, or Analytical Chemistry 1; Philosophy 3; Physics 4a, 7, 12; General Chemistry 4; Astronomy 2, 5; Mineralogy 1 or 2.

Fourth Year. Philosophy 1; Physics (unless previously taken) 4a, 7, 12; General Chemistry 3; Mechanical Engineering 1, 2, or 4; and, if the student has time for them, Mathematics or Quantitative Analysis; Botany 3.

B. ASTRONOMY.

First Year. Mathematics 10 or 10a, 12, 14, 15; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3, 11; Philosophy 3; Physics 7; General Chemistry 4 or 5; Astronomy 2, 5, 8, 9; Mineralogy 1.

Fourth Year. Philosophy 1; Astronomy 1, 4, 10; Mechanical Engineering 1, 2, or 4.

C. CHEMISTRY.

First Year. Mathematics 10 or 10a, 12, 14, 15; Geology 1, and Drawing 1, 4, 9 (if the student has time for them).

Second Year. Physics 3 or 4, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken); Mathematics 2 or 13, 6 or 16, and General Chemistry 5 (if the student has time for them).

Third Year. Philosophy 3; General Chemistry 5 (if not previously taken); Analytical and Organic Chemistry 1, 5, 6; Mineralogy 2.

Fourth Year. General Chemistry 3; General Chemistry 6 with Analytical Chemistry 5a', 11, 11a, 12, or Analytical Chemistry 7, 8, 8a, 11; Botany 2; Philosophy 1 and Mechanical Engineering 1, 2, or 4 (if the student has time for them).

D. GEOLOGY.

First Year. Mathematics 10 or 10a, 12, 14, 15; French 1, 5, or French 4 and German 1, 3 (whichever the student is qualified to pursue); English 1; Geology 1, 2; Zoölogy 1; Botany 9; and, if practicable, a Course in Scientific Nomenclature.

Second Year. French 4 (if not previously taken); German; Physics 10; General Chemistry 2; Geology 3, 5, 6, 7; Drawing 4, 7.

Third Year. English 2; Philosophy 1, 3; Analytical Chemistry 1; Mineralogy 2; Geology 4. It is also recommended that electives be chosen from the following: Mathematics 2 or 13, 6 or 16; Analytical Chemistry 10; Astronomy 2; Geology 7 continued as 7a and 7b.

Fourth Year. Geology 4a, 7a, 8; Drawing 2; Metallurgy 1, 2. It is also recommended that electives be chosen from the following: Mathematics 11; Physics 7; Astronomy 5; Zoölogy 7; and advanced Courses in Mineralogy and Lithology, Geology and Palæontology, Zoölogy, Physiology, Histology.

V. THE SCIENCE AND THE ART OF TEACHING.

The aims of the University in providing instruction in the Science and the Art of Teaching, are:

1. To fit University students for the higher positions in the public school service.

It is a natural function of the University, as the head of our system of public instruction, to supply the demand made upon it for furnishing the larger public schools with superintendents, principals, and assistants. Year by year these important positions are falling more and more into the hands of men that have received their education in the University. Till recently, the training given to our graduates has been almost purely literary; it has lacked the professional character that can alone give special fitness for the successful management of schools and school systems. Now, however, the University offers students that wish to become teachers ample facilities for professional study.

2. To promote the study of educational science.

The establishment of a chair of Teaching is a recognition of the truth that the art of education has its correlative science; and that the processes of the school room can become rational only by developing and teaching the principles that underlie these processes. Systems of public instruction are everywhere on trial, and the final criteria by which they are to stand or fall must be found in a philosophical study of the educating art.

3. To teach the history of education, and of educational systems and doctrines.

The supreme right of the school is to grow; and much hurtful interference might be avoided by ascertaining the direction of educational progress and the history of educational thought.

4. To secure to teaching the rights, prerogatives, and advantages of a profession.

5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

THE TEACHER'S DIPLOMA.

The Teacher's Diploma will be given to resident graduates and to students of the University at the time of receiving a Bachelor's or a Master's degree, provided the candidate has completed three Courses of study offered by the Professor of the Science and the Art of Teaching, viz., Courses 1 and 2, and some three-hour Course; and, also, at least one of the Teachers' Courses offered by other Professors, and by special examination has shown such marked proficiency in the Course chosen as qualifies him to give instruction.

V. THE SCHOOL OF POLITICAL SCIENCE.

Since the establishment, in 1881, of the School of Political Science, experience has shown that, under the flexible elective system now in force in this Department, instruction in the studies peculiar to such a school may be provided without maintaining any sharply defined independent organization. Under the general designation of Political Science may be enumerated the classes in Political and Constitutional History; in Political Economy; in Sanitary Science; in Constitutional Law; in International Law and Diplomacy; in the Principles of Finance; in the Financial History of the United States; in Theories and Methods of Local Govern-

ment; in Theories and Methods of Taxation; in Political Ethics; in the Historical Development of Educational Systems.

The general scope of the instruction is indicated in the announcement of Courses in History (page 49); Courses on the Historical Development of Educational Systems (page 52); and Courses on the Economic Sciences, and on International Law and Diplomacy (page 53).

All candidates for degrees in the Department of Literature, Science, and the Arts, if properly qualified, are admitted to the classes above mentioned. Students not candidates for a degree may also be admitted to these classes provided they have already matriculated in the Department of Literature, Science, and the Arts, and provided, further, they satisfy the officer in charge of the class they desire to enter, that they are qualified to pursue the work with advantage to themselves and without detriment to others.

The General Library is believed to be one of the best in the country for the use of students carrying on investigations in Political Science. It consists of about 47,000 volumes and 11,400 pamphlets. The Rau Library, presented to the University by Hon. Philo Parsons, of Detroit, contains about 4,300 volumes and 5,000 pamphlets, and is especially rich in European works on the Science of Government, Political Economy, and cognate subjects. This collection has been supplemented recently with more than 2,500 volumes on Political and Constitutional History and methods of local government in Europe and America.

Those desiring more particular information on any subject connected with the School of Political Science are requested to address Professor Thomas M. Cooley, Dean of that School.

VI. RULES AND REGULATIONS OF THE DEPARTMENT.

I. ELECTION OF STUDIES.

1. The maximum number of hours a week a student may elect without special permission of the Faculty is the following:

During the first year, sixteen hours:
 During the second year, eighteen hours:
 During the third year, eighteen hours:
 During the fourth year, twenty hours.

In cases of exceptional proficiency additional hours will be granted by the Faculty on especial request; but in all cases requests for permission to take an additional number of hours must be made in writing, and must be deposited in the Secretary's box on or before the *first Monday* of the semester during which the additional work is desired.

2. In their first year, students are recommended to make their elections in accordance with the following schemes. In cases where, for good reason, it is not practicable to elect sixteen hours, a smaller number (fifteen, or fourteen) may be chosen.

I. For candidates for the degree of Bachelor of Arts:

First Semester.—Greek, four hours; Latin, three hours; Mathematics, three hours; French, four hours; English, two hours; total, sixteen hours.

Second Semester.—Greek, four hours; Latin, four hours; Mathematics, four hours; French, four hours; total, sixteen hours.

II. For candidates for the degree of Bachelor of Philosophy:

First Semester.—Latin, three hours; Mathematics, three hours; French and German, eight hours; English, two hours; total, sixteen hours.

Second Semester.—Latin, four hours; Mathematics, four hours; French and German, eight hours; total, sixteen hours.

III. For candidates for the degree of Bachelor of Letters:

First Semester.—Mathematics, two hours; French, four hours; German, four hours; History, or elective studies, six hours; total, sixteen hours.

Second Semester.—French, four hours; German, four hours; English, two hours; History, or elective studies, six hours; total, sixteen hours.

IV. For candidates for the degree of Bachelor of Science (in General Science):

First Semester.—Mathematics, three hours; French and German, eight hours; elective studies, five hours; total, sixteen hours.

Second Semester.—Mathematics, four hours; French and German, eight hours; English, two hours; elective studies, two hours; total, sixteen hours.

V. For candidates for the degree or Bachelor of Science (in Chemistry, or in Biology):

The same as for the course in General Science, except as modified by differences in the requirements in French and German (see pages 69 and 85-87).

VI. For candidates for the degree of Bachelor of Science (in the Engineering Courses):

a. In Civil Engineering:

First Semester.—Mathematics, four hours; English, two hours; Mineralogy, two hours; Drawing, four hours; French, German, or elective studies, four hours; total, sixteen hours.

Second Semester.—Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours; total, sixteen hours.

b. In Mechanical Engineering:

First Semester.—Mathematics, four hours; English, two hours; Drawing, two hours; Mechanical Engineering, five hours; French, German, or elective studies, three hours; total, sixteen hours.

Second Semester.—Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours; total, sixteen hours.

c. In Mining Engineering:

First Semester.—Mathematics, three or four hours; English, two hours; Drawing, two or three hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

Second Semester.—Mathematics, four hours; Drawing, three hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

3. Except as provided in (1) and (2) each student may elect his studies and may pursue them in any order he may choose, subject only to the following restrictions:

(a) Before entering on any study the student must give the Professor in charge satisfactory evidence that he is prepared to pursue it with advantage.

(b) If he is a candidate for a degree, he must at some time take all the studies "required" for the degree he seeks.

(c) No student will be allowed to elect merely a part of a Course without special permission from the Faculty.

(d) No credit will be allowed to a student for work in any Course, unless the election of the work is formally made and reported to the Secretary of the Faculty before the work is begun.

(e) After the second Monday of each semester no study can be taken up or dropped without special permission of the Faculty.

(f) The Faculty will require a student to drop a part of his work at any time, if in their opinion he is undertaking too much; or to take additional work, if they think he is not sufficiently employed.

(g) The Faculty reserve the right to withdraw the offer of any study not chosen by at least six persons.

4. After matriculation, a student cannot, without special permission of the Faculty, be admitted to examination in any one of the Courses given, until he has received in the University the regular instruction in such Course.

5. The student is urged to make his choice of studies with care, and with reference to some plan. The members of the Faculty will be ready to give advice and assistance in this regard.

II. EXAMINATIONS.

1. All students of this Department, whether candidates for a degree or not, if at work upon the credit system, are required to attend all the examinations in the Courses of study they pursue.

2. No student absent from any regular examination in any Course of study that he may have pursued, will be allowed to take such omitted examination before the next regular examination in that Course. In cases of great urgency, however, the Faculty may grant students special permission to be examined at an earlier date.

3. No student whose examination in any Course is reported as "*Incomplete*," will receive credit for that Course until after the examination has been completed. In case, however, the examination be not completed within one year, the unfinished Course will be regarded and treated as Not Passed.

4. Any student reported as passed "*Conditionally*" in any Course, must remove the condition within one year from the date of the examination in which it was incurred; otherwise, the Course passed conditionally will be regarded and treated as a Course "*Not Passed*."

5. Any student reported as "*Not Passed*" in any Course, will receive no credit for that Course until he has again pursued it as a

regular class exercise and has passed the regular examination in the same.

6. Any student detected in the use of illegitimate help at any examination, will be regarded as an *Absentee* from that examination and will be treated as such.

7. All students are regarded as strictly on probation until they have removed all conditions incurred in the examinations for admission to the University. All such conditions must be removed during the year following the date of the examination. Students who have any admission conditions outstanding at the beginning of their second year of residence will not be allowed to join their classes until such conditions are removed.

III. RELATION TO OTHER DEPARTMENTS.

1. Candidates for a degree in this Department, who wish to pursue studies in any other Department, may be granted that privilege, provided they lack no more than three Full Courses for graduation, and distribute their work in this Department as evenly as possible throughout the year.

2. All students admitted from other Departments of the University to the privileges of this Department are regarded in the class-room as members of this Department, and are required to pass the regular examinations with the classes in which they are enrolled. Violations of this requirement will be deemed a forfeiture of the privileges of this Department; but this rule is not to be interpreted as applying to those who are permitted to attend lectures or other exercises without being enrolled.

IV. ATTENDANCE AND DISCIPLINE.

The State of Michigan extends the privileges of the University without charge for tuition, to all persons of either sex, who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission of the President.

Such delinquencies as tardiness, absence, deficiencies, and offenses against good order, in the several departments of instruction, are ordinarily dealt with by the Professor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed, whenever in the opinion of the Faculty they are pursuing a course of conduct seriously detrimental to themselves or to the University.

The following is a By-Law of the Regents:

"Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfill, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time he shall be dismissed."

V. FEES AND EXPENSES.

For information in regard to fees and expenses, see page 27.

DEPARTMENT

OF

Medicine and Surgery.

I. THE COLLEGE YEAR.

The thirty-eighth course of instruction in the Department of Medicine and Surgery of the University of Michigan will commence on Saturday, October 1st, 1887, and will end the last part of June, 1888. It is divided into two semesters, the first ending on the evening of February 17th, 1888, and the second beginning the 20th of the same month, and continuing to the end of the college year. There will be a Thanksgiving recess of three days, commencing on Tuesday evening before Thanksgiving, and a holiday vacation beginning on the evening of December 23d, 1887, and continuing to the evening of January 9th, 1888. The lectures will continue to June 15th, 1888, at which time certificates will be given to those who have complied with the requirements for a full course. The examinations will then commence and be concluded in time for preparation for the Commencement exercises at the close of the college year.

II. EXTENSION OF THE COURSE.

To meet the requirements of the constantly increasing expansion of Medical Science, and to accommodate and benefit those students who desire a thorough medical education, the course of instruction was some years ago extended to three full college years, of nine months each; and it is gratifying to know that this exten-

sion is appreciated, as is evinced by the large attendance of enterprising students, who have talent, energy, perseverance, and high aims.

In this improved arrangement a successive or graded course of study is combined with repetition of the more important lectures, thus obviating the serious objection of dismissing one part of a connected subject before its relations to other parts can be seen and appreciated, and also avoiding the confusion incident to the presentation at the same time of so many parts of the general subject to the mind of the student at an early period of his studies.

This extended course affords time for the teaching and study of subjects not generally taught, or but very imperfectly, in our medical schools; and especially will it give more time for thorough work in the laboratories now provided. Though not fully supplying the defects of preliminary education, this longer course, accompanied by repeated examinations and written exercises, will supplement some deficiencies of earlier training, and of itself will be a most efficient means of mental discipline, and of literary as well as scientific culture. The practical results of this improvement have been most gratifying to the Faculty, to the patrons of the college, and to the students themselves.

III. REQUIREMENTS FOR ADMISSION.

Every candidate for admission to the Department of Medicine and Surgery must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character.

Women are admitted, as to all other departments of the University, on the same conditions that are required of men.

No previous study of medicine is required for admission. Candidates will be examined as to their elementary education and their fitness to pursue properly and profitably the technical study of medicine. The examination will be in writing. The candidate will be asked to give an account of his previous educational advantages, and will be examined on the following:

1. A good English education, comprising a competent knowledge of Arithmetic, Spelling, Grammar, the Art of Composition, and a respectable acquaintance with English literature; such, for

instance, as may be found in Shaw's Manual of English Literature, or any other similar work.

2. A competent knowledge of Political and Physical Geography; such as is contained in Advanced School Geographies, and in Guyot's Physical Geography.

3. An outline of the history of modern civilized nations, and especially of American history; such as may be found in Manuals of History.

4. A competent knowledge of elementary Zoölogy, including an acquaintance with the characteristics of the principal divisions of the animal kingdom. Packard's Zoölogy may be cited as an illustration of a work to be studied.

In addition to the above requirements, *which alone* will be insisted upon, it is recommended that the students obtain such a knowledge of the Latin language as will enable them to read and write correctly current or ordinary prescriptions, and appreciate the technical language of the natural sciences and of medicine. It is also considered highly desirable that they have a general grammatical acquaintance with the German and French languages. A similar standard in Greek will also be serviceable to the student and is highly recommended. But a knowledge of these ancient and modern languages is not required for admission.

Graduates or matriculates of this University, or of any other University or College, or of any Academy or High School approved by the Faculty of this Department, and persons having certificates based on examination by some recognized medical society, or persons holding first-class or approved certificates from any reliable public school board of being properly qualified as teachers, will not be required to pass any examinations, but will be admitted on the presentation of evidence of such qualifications, or by showing to the Dean such certificates.

Examinations will be held at 2 P. M., on Wednesday and Thursday, September 28 and 29, 1887. Candidates are required to present themselves on one of these days, as they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidates to be present at this time, supplementary examinations will be held at such time as may

be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to examination every student is required to present to the Dean or the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will, therefore, be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Department of Medicine and Surgery, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Should students be ready to begin the study of medicine near the opening of the term in October, it is advised that they enter the Department at once and remain continuously during the three college years—the instruction in the graded course being adapted to beginners. Should it be more convenient for them to begin medical studies at a period distant from the opening of the college year, they should procure one of the text-books in anatomy, in physiology, in chemistry, and perhaps in general pathology, and *materia medica*, and a medical dictionary. A study of such works, even without a preceptor, will afford some general acquaintance with these fundamental subjects, and will, at least, give a knowledge of terms that will be of service in more readily comprehending the lectures.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one year, may be admitted to advanced standing after having passed a satisfactory examination on all the studies which have already been pursued by the class to which they seek admission.

It is however, very earnestly recommended that students, even though they may be able to pass a fair examination on the first year's studies, should nevertheless spend the whole three years in the college and take the regular graded course. If not, they must lose some of the lectures, many important demonstrations, and class recitations in anatomy and other subjects; they will be much restricted for time to do the amount of work required in the laboratories, and will also be unable to attend many of the clinics and special practical exercises, and some of the hospital work provided for the last year's instruction.

IV. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and each student is expected to occupy during the session the seat selected. But, by courtesy, at the clinical and other practical lectures, members of the graduating class are allowed the privilege of seats nearest the patient and the lecturer.

V. COURSE OF INSTRUCTION.

The course of instruction consists of the lectures and exercises *shown in the following table:*

OUTLINES OF STUDIES.

SUBJECTS.	No. of Courses required.	No. of Lectures in each Course.	No. Lectures to be attended.	REMARKS.
Anatomy—Descriptive				Delivered in Anatomical Amphitheatre.
1st year	1	90		
2d year	1	90	180	
Anatomy—Surgical	1			One Lecture a week, in General Lecture Room, to Senior class.
Embryology—Comparative ..	1	20	20	In Anatomical Amphitheatre, with illustrations.
Anatomy—Practical	1			Requiring twelve weeks of afternoon work in the Dissecting Rooms.
Physiology	2	80	160	Didactic Lectures in Amphitheatre, with illustrations.
Physiology				A special course of Laboratory Work in Physiology is offered to the second year's class. (Optional).
Study of Bacteria	1	10	10	In General Lecture room.
Histology and Microscopy ..	1	40	40	In General Lecture-room, with illustrations.
Histology with Practical use of the Microscope, Mounting, etc.				In sections in the Histological Laboratory. Fifteen lessons of afternoon work.
Botany	1	20	20	In Amphitheatre, with illustrations.
General Pathology	2	20	40	In General Lecture-room.
Pathological Anatomy	1	30	30	In Amphitheatre, with illustrations.
General Chemistry	2	48	96	In General Lecture-room, with illustrations.
Physiological Chemistry	1	60	60	In General Lecture room.
Organic Chemistry	2	25	50	In General Lecture-room.
Pathological Chemistry				Continuing through College Year. (Optional).
Qualitative Chemistry	1			Requiring twelve weeks of afternoon work in the Chemical Laboratory.
Analysis of Urine	1			Requiring twelve weeks of afternoon work in the Chemical Laboratory.
An Extended Course in Analysis and Toxicology ..				Continuing through a college year in Laboratory. (Optional).
Zoology, and Physics				Instruction given in the Department of Literature, Science, and the Arts. (Optional).
Materia Medica and Therapeutics	2	60	120	In General Lecture-room.
Electro-Therapeutics				Twelve lessons—practice with Instruments in Laboratory. (Optional).
Physical Diagnosis	2	16	32	In General Lecture-room, supplemented in the Hospital.
Sanitary Science	1	40	40	In General Lecture-room.
Obstetrics	2	60	120	In General Lecture-room.
Diseases of Women and Children	2	45	90	In General Lecture-room.
Clinical Gynecology and Diseases of Children	1	72	72	In Hospital Amphitheatre.
Ophthalmology and Otology ..	1	24	24	In Hospital Amphitheatre.
Laryngology	1	24	24	In Hospital Amphitheatre.
Eye and Ear Clinic	1	72	72	In Hospital Amphitheatre.
Clinical Ophthalmology, at irregular hours	1	128	128	In Hospital, with sections of the class. (Optional).
Systematic Surgery	2	80	160	In General Lecture-room.
Clinical Surgery	1	72	72	In Hospital Amphitheatre.
Clinical Surgery, often shorter lessons	1	128	128	In Hospital Amphitheatre. (Optional).
Practice of Medicine (Systematic)	2	90	180	In General Lecture-room.
Clinical Medicine	1	148	148	In Hospital Amphitheatre.
The Law relating to Physicians	1	5	5	

In this course the studies are so arranged that they may be pursued in the following order:

FIRST YEAR.—Human and Comparative Anatomy, Embryology, Histology, Physiology, Chemistry, Botany, Physiological Chemistry, Hygiene, and Materia Medica and Therapeutics.

SECOND YEAR.—Continuation in Review of Anatomy, Histology, Physiology, Chemistry, and Materia Medica and Therapeutics; with Pathology and Practice of Medicine, Surgery, and Obstetrics.

THIRD YEAR.—Practice of Medicine, Sanitary Science, Surgery and Surgical Anatomy, Obstetrics and the Diseases of Women and Children, Ophthalmology and Otology, and Laryngology, with Clinical Medicine and Surgery, and Clinical Gynæcology.

The above list will be understood to include all the special studies that appertain to, and form an essential part of, the general subjects enumerated. Such are: Histology, physiological and pathological; Laboratory work in Medical Chemistry, in Microscopy, and in Electro-Therapeutics; Qualitative, Physiological, and Pathological Analyses; Toxicology; Physical Diagnosis, etc.

The lectures are so arranged that the more elementary subjects are presented before the student proceeds to those more advanced, so as to secure, as far as practicable, an orderly succession of studies; while the more fundamental subjects are presented a second time during the course, so as to secure a more perfect comprehension of their principles and relations, and to fix the facts more firmly in the mind. The hours of the required lectures are so arranged (four being given each day) that but few are given at the same time, and every facility is afforded for students to attend the repetition of the principal lectures as often as may be thought profitable. The Faculty recognize, what is evident in the experience of all medical students, that attendance upon lectures on the same subject a second time, after other related branches have been studied, is much more interesting and profitable than the first; and hence they require students to attend lectures on all the leading subjects more than once.

The apparatus to illustrate the lectures in Chemistry and Chemical Physics is very full and complete, and the apparatus in the course on Electro-Therapeutics consists of representative specimens of the principal foreign and American manufactures. Working models of these are put into the hands of each student for practical use.

The Chemical Laboratory provides thorough instruction and suitable appliances for the practical study of all branches of Medical Chemistry. In each of the two Laboratory courses *required for graduation*, namely, Qualitative Chemistry (devoted to the study of chemical changes and incompatibilities), and Analysis of Urine (applied to clinical uses and physiological study), students are taken in sections of limited number for daily drill in the classroom, to direct the daily practice in the Laboratory. Before beginning Laboratory work the student takes a preparatory course, with daily recitations, in chemical notation, and at the close of the work in each course is held to an examination. In each of the required courses just mentioned the work begins on October 1, the first week in January, and the first week in April.

By an act of the Legislature, a liberal appropriation for the equipment and conducting of a Histological Laboratory has been made. It is supplied with between twenty and thirty superior microscopes of American manufacture, besides others imported from Europe, and with a stereopticon and duplicates of complete apparatus for use in microscopical investigation. The student thus becomes familiar with the manipulation of microscopes, and studies the most important tissues of the body, and the methods employed in preparing and mounting specimens. During the last college year nearly three hundred students availed themselves of the opportunities for study here offered.

Opportunity for special work in advanced histology is offered to those who have taken the regular work in that branch. In this course are included original investigations and the more systematic study of normal and pathological histology. Students take this advanced work in classes of five each.

A special course in the Pathological Laboratory, lasting from twelve to fifteen weeks, is offered to all students who have become sufficiently familiar with normal histology and the use of the microscope.

Two extended optional courses have also been established, one in Physiological and Pathological Chemistry, and another in Toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in Qualitative and Quantita-

tive Analysis, and the special examination of foods and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in Physiology, Physiological Chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in Quantitative Analysis, and in Pharmaceutical Preparations, are also open to students of medicine who may desire such special training.

Clinics are regularly held in the Hospital Amphitheatre every day during the college year, for medical, surgical, gynecological, and ophthalmological cases, at which time examinations are made, prescriptions given, and surgical operations performed, in the presence of the class.

Lectures on the Law relating to Physicians are given by Professor Rogers, Dean of the Department of Law.

The students are examined often upon the subjects of the lectures in progress, either by the professors or their assistants, and these examinations are regarded as an important part of the teaching.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and such of the lectures and demonstrations as it is thought by each member of the Faculty not desirable to be presented to the combined classes, are given separately; but in most of the lectures, in the public clinics, in the chemical laboratory, and in various other class exercises, it is found that both may with propriety be united.

EXAMINATIONS.

Written examinations are held in the closing week of each semester, and the student may be called upon to write upon some theme assigned by the instructor or selected by himself; the essay, if required, to be defended before the class.

The final examinations in Chemistry, Anatomy, Physiology, and Materia Medica and Therapeutics, are held at the end of the second year; those in Practice of Medicine, Surgery, and Obstetrics

at the end of the third year. The final examinations will be conducted, in part at least, in writing.

VI. REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have completed the required courses in practical anatomy and practical chemistry, and, unless the full course of study has been taken in this College, he must have been engaged in the study of medicine for the period of three full years, including the time spent in attendance upon lectures. He must also have passed satisfactory examinations on all the studies included in the full course of instruction; or, if admitted to advanced standing, he must have attended at least two full courses of medical lectures, *the last of which must be at this College*, and have passed the required examinations.

In consequence of the prominence given to written examinations through the course, no graduating thesis is required.

Students who matriculated prior to 1880, will be allowed to graduate upon the conditions in force at the time of their matriculation.

Students who, in the first year, are allowed by a special vote of the Faculty to take all the lectures of which two courses are required, and who also take a suitable number of those required but once, may, after examination, obtain permission to pursue their studies with a competent preceptor out of the College during their second year; and after completing the course required by strict attendance during the full third year, may present themselves for examination for the degree at the end of that year.

The Department of Medicine and Surgery is distinct in its organization from every other Department in the University, and, under the regulations established by the Regents, the professors are not required to take any part in conducting the examinations of other students, or in recommending them for graduation, or in signing their certificates or diplomas.

VII. FACILITIES FOR INSTRUCTION.

This Department is abundantly supplied with collections of plates, photographs, models, specimens, preparations, apparatus,

and instruments, for the purpose of illustrating the different studies embraced in the course. Additions are made from time to time to these collections by special appropriations of the Board of Regents, so that the Faculty are able to adopt every new method of illustration, and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

The museums of Professors Ford and Sager, embracing several thousand specimens, which are the result of many year's labor in the collection and preparation of materials intended to aid directly in teaching, have now become the property of the University, and are used in the daily work of the class-rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, the various changes that occur from infancy to old age, and the processes of first and second dentition; dissections, general and partial, of the vascular, nervous, and muscular systems, both normal and abnormal; models of various portions of the body in wax, papier maché, and plaster, illustrating morbid growths, skin diseases, etc.; preparations in the comparative embryology, neurology, and craniology of the vertebrata; human embryology, and anatomy and pathology of the diseases of women, etc. The collections of monstrosities, both single and double, of man and the lower animals, is one of the largest in the United States.

The collections illustrative of *Materia Medica* consist of a very complete collection of crude organic medicinal substances, finely displayed and arranged according to their order in Natural History; also about one thousand other specimens of simple mineral and vegetable substances, and pharmaceutical and officinal preparations, active principles, etc., arranged in groups convenient for study. Medical Botany is further illustrated by several hundred large finely-colored plates.

Recently there have been added to the Medical Museum over three hundred preparations in Human and Comparative Anatomy, normal and pathological. The number of new and valuable specimens is being constantly increased.

The Anatomical Law of Michigan furnishes, without embarrassment, a most ample supply of material for the purposes of

Practical Anatomy, and for all students who desire it and have completed the requirements in Descriptive and Practical Anatomy, a course in Operative Surgery upon the cadaver will be offered.

First year students have the opportunity, under competent instruction, to study Comparative Anatomy and Physiology practically by dissecting various animals. While thus becoming familiar with structures and tissues, they also acquire dexterity in the use of instruments preparatory to work upon the human cadaver.

The equipment of the Physiological Laboratory contains most of the more essential instruments used in physiological demonstration and research. The apparatus is all new and is of the highest finish and accuracy. The list of instruments includes: five *du Bois* induction coils; two rotating cylinders with clock work; one *Ludwig's* kymographion; tuning forks for electrical interruption; one adjustable electrical interrupter with clock-work; *Fick's* spring-kymograph; recording chronographs; *Browning* spectroscope; *Thompson's* galvanometer; *Roy-Gaskell* heart-tonometer; *Zeiss* microscopes, foot lathe with working tools, etc., etc. The laboratory is open daily for physiological experiment and research.

The University Hospital, with pavilion buildings of sufficient capacity for a large number of patients, is thoroughly equipped, and is in the immediate charge of a competent house surgeon and physician and an experienced matron. The whole is placed under the direction of the Faculty, who attend regularly upon the patients (each upon such cases as come within his special department) and give clinical instruction in the wards to advanced students. In connection with the Hospital there is a spacious clinical amphitheatre; and there are also separate wards for the reception and treatment of patients affected with diseases of the eye and ear. Students are required to take the history and keep a record of patients, and are offered an opportunity of personally examining the patients under proper supervision. It is the aim of the Faculty to make instruction in this branch of medicine systematic and thorough, and this they are enabled to do by an abundance of interesting cases which present themselves in the clinic every year.

The Hospital is kept open for patients applying from this and other States, during the whole college year, the only restriction

being that no contagious diseases are admitted. Under the present organization, patients are much better accommodated, and clinical instruction is rendered more systematic and efficient than was formerly possible. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services of the Faculty being rendered gratuitously to those made available for clinical instruction. There are annually about fifteen hundred cases received into the Hospital, examined, prescribed for, and operated upon in the presence of the students. A large portion of these are from a distance and are cases of more than common interest, including many cases of chronic diseases of the lungs, the heart, and the nervous system, and of the most important operations in the surgical, ophthalmological, and gynecological departments.

In addition to the foregoing aids to study, the students in medicine have free access to the general botanical, zoölogical, and geological cabinets of the University, which are estimated to contain 255,000 specimens. The General Library, containing about 47,000 volumes, of which 3,000 are medical works, is also open to all students. A complete catalogue of the Library, arranged both by the names of the authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe are taken and kept on file in the Library.

VIII. TEXT-BOOKS AND BOOKS OF REFERENCE.

The books mentioned in the following list are standard authorities, and will form a good nucleus for a medical library. Any one of those mentioned in each department will answer the necessities of the student; and, whenever a preference exists, it is given to the one first in order on the list. The text-book of Professor Palmer will be followed in the instruction on Pathology and Practice of Medicine, and in other departments reference will be made to text-books which students are expected to consult.

ANATOMY.—Gray, Quain, Wilson, Darling, Ford's Questions on Anatomy, Histology, and Physiology.

HISTOLOGY.—Stowell's Manual, Klein, Stricker.

PHYSIOLOGY.—First Year—Martin's Human Body or Kirk's Handbook of Physiology, Vaughan's Text-book of Sanitary Science. Second Year—Stirling's Landois' Physiology, Foster's Text-book of Physiology.

• **CHEMISTRY.**—*General Chemistry.*—Miller's Chemical Physics, Miller's Inorganic Chemistry, Bloxam's Chemistry, Fownes' Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry, Vaughan's Physiological Chemistry.

MATERIA MEDICA AND THERAPEUTICS.—H. C. Wood, Jr., Stillé, Bartholow.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Green, Wagner, Paget, Williams's Principles. *For Reference,* Rokitsansky, Virchow.

OBSTETRICS.—Galabin, Lusk, Playfair, Leishman. *For Reference.*—Schroeder, Cazeaux, Hodge. *Special Subjects.*—Tanner on Pregnancy, Barnes on Obstetric Operations, Elliott's Obstetric Clinic, Barker on Puerperal Diseases.

DISEASES OF WOMEN.—Thomas, Emmet, Goodell's Lessons in Gynæcology, Barnes. *Special Subjects.*—Tilt on Uterine Therapeutics, Klob on Pathological Anatomy of the Female Sexual Organs, Peaslee on Ovariectomy, Sims on Uterine Surgery, Emmet on Vesico-Vaginal Fistula, Skene on Diseases of the Bladder and Urethra, Tait on Diseases of the Ovaries.

DISEASES OF CHILDREN.—J. L. Smith, Vogel, Tanner, Meigs and Pepper. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood, Combe on the Management of Infancy, Routh on Infant Feeding, Holmes, or Guersant, on the Surgical Diseases of Children.

PRACTICE OF MEDICINE.—Palmer's Science and Practice of Medicine. *Special Subjects and for Reference.*—Williams on Consumption, Murchison on the Liver, Da Costa, or Finlayson, on Medical Diagnosis, Loomis on Physical Diagnosis, Reynolds' System of Medicine, Ziemssen's Cyclopædia.

SURGERY.—Erichsen, Hamilton, Druitt. *Special Subjects.*—Billroth on Surgical Pathology, Hamilton on Fractures and Dislocations, Bumstead on Venereal Diseases, Manney on Surgical Diagnosis, Sayre on Club Foot, Sir Henry Thompson, or Gouley, on Genito-Urinary Organs, C. Henri Leonard on Bandaging. *In Minor Surgery and Surgical Appliances.*—Bell, Le Gros Clark, Annandale, Wales, Sargent. *For Reference.*—Gross's System of Surgery, Agnew, Holmes' System of Surgery.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler, Schweigger, Sælberg Wells, Browne on the Ophthalmoscope. *On the Ear.*—Roosa, Burnett's Treatise on the Ear, Mittendorf on Diseases of the Eye and Ear, Pomeroy.

The student who begins a course of reading without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, anatomy, physiology, and general

and medical chemistry; and advancing to the other studies, to select one of the first-mentioned text-books in each department, passing to the "*Special Subjects*" only when near the completion of the course, or as he may desire for particular reasons to become more fully informed on them.

IX. FEES AND EXPENSES.*

MATRICULATION FEE.—For residents of Michigan, *ten dollars*; for non-residents, *twenty-five dollars*.

ANNUAL FEE.—For residents of Michigan, *twenty-five dollars*; for non-residents, *thirty-five dollars*.

GRADUATION FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *twenty dollars*, which covers all the expense for practical anatomy during the whole college course, is made for material used in dissection.

LABORATORY EXPENSES.—These will vary with the prudence and economy of the student. For all the courses in the Chemical Laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the Histological Laboratory. This charge is subject to change by the Regents as may be thought necessary for furnishing such material. A charge of *one dollar* is made to students who take the course in Electro-Therapeutics.

The professors make no charges for lecture tickets, nor are there any additional charges for the recitations conducted by the assistants to the several professors.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this Department, be permitted such attendance on the payment of the matriculation fee only.

The total amount of fees paid to the Department during the whole three years' course, for matriculation, incidental expenses, and materials used, and diploma (the professors charge no fees), is, to those who are residents of the State of Michigan, \$139.00; and to those not residents of the State, \$184.00.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office:

Letters of inquiry may be addressed to the Dean of the Faculty of the Department of Medicine and Surgery, Ann Arbor, Michigan.

Department of Law.

In this Department it is the constant endeavor of the Faculty to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country. No effort will be spared to make the Department deserve in the future a prosperity like that it has hitherto enjoyed. A spacious building is devoted to its accommodation, with ample debating and society rooms, and in every respect the conveniences of the Department are exceptionally good.

I. IMPROVED AND EXTENDED COURSE OF INSTRUCTION.

The course of instruction has been extended recently to two years of nine months each. The lengthening of the course of study in the Department was due to the sincere conviction that the standard of legal education should be raised, and that students should be able to obtain a more thorough and extended preparation for the practice of law. It is the aim of this Department to elevate the standard of legal education and fitness for the legal profession.

By the extension of the term so as to include the entire college year, opportunity is afforded the students in this Department, without additional expense, to attend some of the lectures delivered in the Department of Literature, Science, and the Arts. These lectures will be found in a high degree useful and important, and students will be encouraged to give attention to them, and especially to the constitutional history of this country and of England.

When the Department was established, the course of instruction was so arranged that the members of both classes heard the same lectures, receiving to that extent their instruction in common. During the past year, however, it has been determined to abandon that method of instruction, and to adopt instead thereof a graded course of instruction, thereby promoting the efficiency of the Department, and making possible a more scientific teaching of the law.

The following more specific statements will indicate the course of instruction in the Department of Law, and the subjects upon which students will be required to hear lectures and pass satisfactory examinations.

II. THE LECTURE COURSE.

It is the design of the department to give instruction that shall fit students for practice in any part of the country. The course of instruction will embrace the several branches of Constitutional, International, Maritime, Commercial, and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and will include such instruction in Common Law and Equity Pleading, Evidence, and Practice, as will lay a substantial foundation for practice in all departments of law.

Lectures are delivered as follows:

TO THE JUNIOR CLASS.

CRIMINAL LAW, AND MEDICAL QUESTIONS BEARING ON IT, *Professor Rogers.*

TORTS, *Professor Rogers.*

THE LAW OF REAL PROPERTY, INCLUDING THE LAW OF EASEMENTS, *Professor Hutchins.*

THE ORIGIN, HISTORY, AND NATURE OF EQUITY JURISPRUDENCE, AND THE MAXIMS OF EQUITY, *Professor Hutchins.*

CONTRACTS, *Professor Walker.*

AGENCY, *Professor Walker.*

PARTNERSHIP, *Professor Walker.*

EVIDENCE, *Professor Griffin.*

COMMON LAW PLEADING AND PRACTICE IN CASES AT LAW, *Professor Griffin.*

TO THE SENIOR CLASS.

CONSTITUTIONAL LAW, *Professor T. M. Cooley.*

THE LAW OF TAXATION, *Professor T. M. Cooley.*

THE LAW OF THE DOMESTIC RELATIONS, *Professor Rogers.*

WILLS, THEIR EXECUTION, REVOCATION, AND CONSTRUCTION, *Professor Rogers.*

THE ADMINISTRATION AND DISTRIBUTION OF ESTATES OF DECEASED PERSONS, *Professor Rogers.*

EQUITY JURISPRUDENCE, AND EQUITY PLEADING AND PROCEDURE, *Professor Hutchins.*

PERSONAL PROPERTY AND TITLE THERETO BY GIFT, SALE, MORTGAGE, AND ASSIGNMENT, *Professor Walker.*

THE LAW OF PRIVATE AND MUNICIPAL CORPORATIONS, *Professor Walker.*

JURISPRUDENCE OF THE UNITED STATES, *Professor Griffin.*

INTERNATIONAL LAW, *Professor Griffin.*

SPECIAL HEADS OF MEDICAL JURISPRUDENCE, *Professor Dunster.*

TOXICOLOGY IN ITS LEGAL RELATIONS, *Professor Vaughan.*

LEGAL MICROSCOPY, *Professor Stowell.*

Members of the junior class are not allowed to attend the lectures delivered to the senior class. The work assigned is fully sufficient to occupy their attention during the year, and it would only be confusing for them to attempt to hear lectures on subjects additional to those assigned to them. But the members of the senior class, inasmuch as they have been over the subjects of the junior year, are encouraged to attend the lectures delivered to the junior class, so far as they may be able so to do. Such a review of previous work, it is thought, will help to establish the principles of the law more firmly in the memory of the student.

The lectures to the senior class commence at ten o'clock A. M., and those to the junior class at two o'clock P. M., standard time.

III. TEXT-BOOK INSTRUCTION.

In addition to the instruction by lectures is the instruction by text-books.

The members of the junior class are required to attend daily recitations in Cooley's edition of Blackstone's Commentaries, Anson on Contracts, and Schouler on Bailments. This work is done under the direction of Assistant Professor Knowlton, and continues throughout the Junior year. The class meets at eight o'clock A. M.

All members of the senior class attend, during the second semester, recitations in Gould on Pleading, and such of them as may so elect can attend recitations in Bliss on Code Pleading. Students who come from Code States are expected to attend regular recitations in this work, and they will find the instruction thus obtained invaluable in their subsequent practice. Students from states where the reformed procedure has not been introduced may or may not, at their option, attend such recitations. But students from Code States are expected to attend the recitations in Gould on Pleading, as well as in Bliss, inasmuch as the works on common law pleading are not superseded by the codes, and it is thought that a careful study of such works is the best preparation for the

pleader, whether he practice under the old or the new procedure. This work is under the direction of Assistant Professor Knowlton. The class meets at nine o'clock, A. M.

IV. THE STUDY OF LEADING CASES.

As much instruction can be derived from a proper study of what are known as Leading Cases, and inasmuch as it is desirable that students should be familiar with the more important of these cases, they are requested to purchase "Indermaur's Common Law Cases." They are expected to make themselves familiar with the cases contained in that work, and they will be examined upon them during the year. This work is under the direction of Professor Rogers.

V. MEDICAL JURISPRUDENCE.

It has been thought desirable that students of law should receive instruction in certain branches of medical jurisprudence, and arrangements have accordingly been made for the delivery of a course of lectures on certain medico-legal subjects which are of especial interest to the legal profession. These lectures will be delivered during the second semester, and to the members of the senior class only.

Professor Dunster will lecture on some special heads of medical jurisprudence, including signs and symptoms of pregnancy, abortion and premature labor, duration of gestation, puerperal insanity, infanticide, and rape.

The lectures on legal microscopy by Professor Stowell will consist of a discussion of those subjects, liable to come before the courts, where the microscope can be employed as an aid in arriving at a correct diagnosis;—as in the detection and identification of blood stains, of mineral and vegetable poisons, of the complex tissues, of hair, of commercial fibres, etc.

The lectures on toxicology by Professor Vaughan will cover the subject of poisons in its medico-legal relations.

VI. ELOCUTION.

Arrangements have been made for the giving of instruction in elocution to the students of law. This instruction will be given to the members of both classes, an advanced course having been arranged for the members of the senior class.

VII. EXAMINATIONS.

The members of both classes are examined daily throughout the year on the lectures delivered. At the end of the first year the members of the junior class will be subjected to an oral and written examination on the lectures delivered during the year, and their promotion to the senior class is dependent on the manner in which they pass such examination.

At the end of the second year the members of the senior class are required to pass satisfactory oral and written examinations on the subjects lectured on during both years.

Satisfactory examinations must also be passed by the members of both classes in the text-books used for purposes of instruction.

The Faculty, however, will not hesitate to drop a student from the rolls at any time during the year, on becoming satisfied that such student is neglecting his work and not conforming to the requirements of this Department.

VIII. CONSTITUTIONAL HISTORY AND POLITICAL SCIENCE.

It seems now to be conceded not only that the law should be studied in a law school rather than in an office, but that the law school should be connected with a university, where students may avail themselves of opportunities for the study of such other branches of learning as are of allied significance.

It is believed that great benefit may be derived by students in the Department of Law from the instruction given on kindred subjects in the School of Political Science. Arrangements have therefore been made by means of which students in the Department of Law, having first obtained permission from the Faculty of Law, may, on special application to the Dean of the School of Political Science, Professor Thomas M. Cooley, LL. D., attend any or all of the lectures delivered in that School, free of charge. The Faculty of Law, however, reserve the right to require such students to give up any or all studies they may be pursuing in the School of Political Science, whenever it appears that the pursuit of these studies is attended with an unsatisfactory performance of the duties required in the Department of Law. Among the subjects upon which instruction is there given may be named the following as being particularly suitable for Law students; the Political and Con-

stitutional History of England; the Political and Constitutional History of the United States; American Constitutional Law; the Political and Social History of Europe during the Middle Ages; the Elements of International Law; the History of Treaties. Instruction is also given in that School upon social, sanitary, and the economic sciences. Compare pages 49, 50, and 53.

IX. REQUIREMENTS FOR ADMISSION.

Any person is at liberty to matriculate in the Law Department, and have a seat assigned him for attendance upon the lectures.

If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age, and must pass such examination in respect to general education as shall satisfy the Faculty that his educational attainments are such as will justify his entering upon the practice of the law when his legal studies are completed. Examinations will be held in the Lecture Room, in the Law Building, at 2 P. M., on Thursday and Friday, September 29th and 30th, 1887. The examination on the first of these days will have reference to general education, and will be on the subjects hereinafter named. The examination on the succeeding day will have reference to legal education, and is confined to candidates for advanced standing. Applicants for advanced standing are required to be present at both of these examinations. Candidates are required to present themselves on these days, as they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Graduates of colleges, and students who have honorably completed an academical or high school course, and who present a certificate or diploma from the academy or high school will be admitted without preliminary examination. No student who does not present such certificate or diploma will be admitted as a candidate for a degree, until he has passed a satisfactory examination in Arithmetic, Geography, Orthography, English Composition, and

the outlines of the History of the United States, and of England. The examination will be conducted in writing, and the papers submitted by the applicants must evince a competent knowledge of English Grammar.

Inasmuch as many present themselves a long time after completing their school education, it may be said that the examination will not be technical. The object is not to ascertain the amount of technical school book knowledge which the candidate possesses, but the aim is to ascertain the results of his previous training, and his present practical capacity and ability to appreciate the technical study of law.

Before admission to examination, every student is required to present to the Secretary of the Law Faculty the Treasurer's receipt for payment of the matriculation fee and annual fee. It is essential, therefore, that a candidate for examination should apply first to the Steward of the University at his office in University Hall, register his name as a student in the Department of Law, and pay his fees to the Treasurer. (See page 27.) He is then entitled to apply for admission to examination, and in case of rejection, the moneys paid preliminary to such examination will be refunded by the Treasurer.

X. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and each student is expected to occupy, during the session, the seat selected.

XI. CERTIFICATES OF ATTENDANCE.

When a person is connected with the school for a period not entitling him to graduate, he may on application to the Secretary of the Faculty, receive, instead of a diploma, an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

XII. REQUIREMENTS FOR GRADUATION.

The degree of Bachelor of Laws will be conferred upon such students as shall pursue the full course of two years in this Department, and pass an approved oral and written examination. It will also be conferred upon those who, having attended another law school for a period equal to one year of our course, or practiced law for one term under a licence from the highest court of general

jurisdiction in any State, where the requirements for admission to the bar are equal to those in Michigan, shall also pursue one year's course in this Department, and pass a like examination.

Special cases depending on previous reading in a law office for a considerable period will be decided by the Faculty on application accompanied by a showing of the facts.

When a candidate for admission applies for advanced standing the same examination as to educational qualifications is held as in other cases.

Each candidate for a degree will be required to prepare and deposit with the Faculty, at least one month before graduation, a dissertation, not less than forty folios in length, upon some legal topic selected by himself. The dissertation must be satisfactory in matter, form, and style; and the student presenting it will be examined upon it.

XIII. MASTER'S DEGREE.

The degree of Master of Laws is not conferred by this Department. But any graduate of the Department of Literature, Science, and the Arts, who is pursuing professional studies in this Department, may, upon proper application to the Faculty of Law and to the Faculty of the Department of Literature, Science, and the Arts, be permitted to become at the same time a candidate for the degree of Master of Arts, Master of Science, or Master of Philosophy, as the case may be, on condition that his term of residence and study covers two years before he can be admitted to an examination for such a degree. The privilege thus extended to graduates of this University is also extended to graduates of other colleges who can satisfy the Faculty of the Department of Literature, Science, and the Arts, that the courses of study for which they obtained their first degrees are equivalent to the courses of study required for the corresponding degrees at this University. (See pages 71 and 72.)

It is understood, however, that on complaint of unsatisfactory work in this Department, the Faculty of Law will require students of Law to discontinue their studies for the Master's degree.

Useful and desirable opportunities are thus afforded to college graduates who wish to study Law and at the same time to supplement their professional studies with a broader knowledge of some

of the branches taught in the Department of Literature, Science, and the Arts, including those taught in the School of Political Science. They are thereby enabled to enlarge their acquisitions in such branches as will be helpful to them in their professional work.

XIV. MOOT AND CLUB COURTS.

Moot Courts are held from time to time during the term, in which students discuss cases previously assigned them for that purpose by the professors. These Courts are presided over by the professor lecturing for the day, who, at the conclusion, reviews the arguments and gives his decision upon the points involved. The effort here is to make not merely *theoretical*, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Court is made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and the attention of the faculty is directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity is afforded all the senior students to participate in this Court.

Moot Courts are conducted on the theory that certain facts are true, and that the only subject open to discussion is the rule of law to be applied to them. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings, and draw up a brief in which the rules of law are stated under appropriate divisions and sustained by authorities which he proposes to rely upon in his oral argument. The pleadings are submitted to the professor who lectures on the subject of pleading and practice. He calls the attention of the student to such errors as may exist, and gives such other practical information as he may deem advisable.

Club Courts, too, are organized among the students, to be arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These courts, thus far, have been found alike interesting and useful to those who have participated in them. The Club Courts are open to the members of either the senior or junior class, and students are strongly recommended to connect themselves with some one of these organizations. There are also two flourishing literary societies established and conducted by the students of law for purposes of literary culture.

While thus endeavoring to impart legal knowledge, the fact will not be lost sight of, that a high moral standard is a most important requisite to a successful and honorable career; and no pains will be spared in impressing this fact upon students, and in inculcating a high tone of professional ethics and action.

XV. PRIOR READING IN LAW.

The Faculty are frequently applied to by letter for advice upon the question whether it is desirable to enter upon the study of law, and acquire some general knowledge of the principles, before admission to the Department. It is somewhat difficult to lay down rules that can be advantageously applied in all cases, but the Faculty are of the opinion that, for the first year at least, more positive benefit is received from lectures, and more positive advancement in law made, by students who, before coming, have read at least the Commentaries of Blackstone, than by those who are beginners here. But the Faculty are aware of the great difficulty experienced by the student in giving proper direction to his reading and investigation at the beginning; and they do not therefore make it a condition of admission that there shall be any prior reading whatever in law. The want of such reading will, doubtless, in many cases, be fully compensated in the aid the beginner may receive here in the outset. It is not often that the student receives the needed assistance except in law schools. The active practitioner, engrossed with the care of business, cannot—or at least, as proved by experience, does not—furnish the students who place themselves in his charge the attention and assistance essential to give a correct direction to their reading, and to teach them to apply it usefully and aptly in their subsequent professional life. The reading of a student in a law office is practically the study of law by himself, and without assistance; and he neither acquires that familiarity with books and that facility of reference which it is the aim of this Department to assist him in acquiring, nor learns anything of the practical application of legal principles beyond what he may pick up from observation of the practice of his preceptor.

XVI. THE LAW LIBRARY.

The Law Library contains about 9,250 volumes, including the reports of every State in the Union, the reports of the Federal courts, as well as a very excellent collection of the English and

Irish reports. In addition to the reports is an extensive collection of treatises on American and English law. By yearly additions the effort will be to keep the Library supplied with new reports as they are issued, and in this way to make it as good a working library for students as could be desired. The Library is open for consultation by students from 7:35 o'clock a. m. to 11:35 a. m., and from 12:35 p. m. to 5 p. m., as well as from 6:35 p. m. to 8:35 p. m., standard time, during the academic year. The Library is closed on Saturday afternoons and evenings. Students are not permitted to take the books from the library building, but during the hours named are allowed free access to the same.

The Honorable C. H. Buhl, of Detroit, recently presented to the Law Department of the University what is known as the "Buhl Law Library," consisting of 5,000 volumes of reports and text-books. This generous gift has made the Law Library a most excellent one in which to pursue an extended study of jurisprudence.

The Library was also enriched some years ago by the donation of the valuable law library of the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts.

The Journal of Jurisprudence (Edinburgh), the Law Quarterly Review (London), the American Law Review, the American Law Register, the Criminal Law Magazine, the Albany Law Journal, the Central Law Journal, and the Federal Reporter, are regularly taken and kept on file.

Students of the Department of Law are also allowed the use of the General Library of the the University, which contains 47,187 volumes, and 11,404 unbound pamphlets. (See page 17.)

XVII. TEXT-BOOKS AND BOOKS OF REFERENCE.

Text-books and books of reference are very numerous, and students will find the professors ready to lend them aid in making proper selections. While several copies of each of the leading text-books will be found in the Library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. They will find that it will greatly facilitate their studies to have at hand at all times such of the leading text-books as treat of the more important branches of the law. By so doing

no loss will be incurred as the books will be found essential in subsequent practice.

It is necessary that students should provide themselves with Blackstone's Commentaries, and the edition edited by Mr. Justice Cooley is preferred. It is also desirable that they be provided with the Commentaries of Chancellor Kent, as students are required to attend recitations in the Commentaries of these writers.

The books mentioned in the following list may be used to advantage upon the subjects named. As a general thing any one of those mentioned in each department will answer the necessities of the student, and, whenever a preference exists, it is given to the one first in order on the list. But in the department of Constitutional History all the writers named may be read, or consulted, as for the most part covering different periods of time.

Constitutional History.—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1860); Stubbs's Constitutional History of England; Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

Constitutional and Statute Law.—Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Convention; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

Jurisprudence.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law.—Wheaton's Elements of International Law; Phillimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

Roman Law.—Morey's Outlines of Roman Law; Hadley's Introduction to Roman Law; Mackeldey's Roman Law; Mackenzie's Roman Law.

Contracts.—Parsons, Anson, Metcalf, Pollock.

Bailments.—Schouler, Edwards, Story.

Sales.—Benjamin.

Domestic Relations.—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonell on Master and Servant; Simpson on Infants.

Corporations.—Angell and Ames, Field, Morawetz, Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes.—Byles, Chalmers, Parsons; Daniels on Negotiable Instruments.

Torts.—Cooley, Bigelow, Addison.

Evidence.—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton, or Starkie on Evidence; Rogers on Expert Testimony.

Real Property.—Williams, Washburn, Tiedeman, Boone.

Partnership.—Lindley, Parsons.

Wills and Administration of Estates.—Redfield on Wills; Jarman on Wills (Randolph & Talcott or Bigelow's edition); Hawkins on Construction of Wills; Williams on Executors.

Common Carriers.—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

Equity.—Pomeroy's or Story's Equity Jurisprudence; Snell's, Bisham's, or Adams's Equity.

Criminal Law.—Harris, Bishop, Wharton, May, Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading.—Gould, Stephen, Chitty; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency.—Evans, Story, Wharton.

Damages.—Sutherland.

Mortgages.—Jones.

Insurance.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

Shipping and Admiralty.—Abbott, Conkling, Desty.

Easements.—Goddard, Washburn.

Taxation.—Cooley, Burroughs, Desty.

XVIII. FEES AND EXPENSES.*

MATRICULATION FEE.—For Residents of Michigan, *ten dollars*; for non-residents, *twenty-five dollars*.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

ANNUAL FEE.—For residents of Michigan, *twenty-five dollars*; for non-residents, *thirty-five dollars*.

GRADUATION FEE.—For all alike, *ten dollars*.

The matriculation fee is paid but once, and entitles the student to the privileges of permanent membership in any Department of the University. The annual fee is paid at the beginning of the first year, and of every subsequent year of attendance. For other details of expenses, see page 27.

Those who desire any further information concerning this Department, may address letters of inquiry to the Dean of the Department of Law, Ann Arbor, Michigan.

School of Pharmacy,

This School is organized to give training for service in dispensing Pharmacy. It furnishes preparation for the practice of the pharmacist, the general analyst, the manufacturing chemist, and the wholesale druggist. Attention is given to sanitary chemistry, and exercises are required upon adulterations of food as well as medicines. The graduate is qualified for responsibility as the chemist of the medical profession, and of the community. The course also affords a favorable means of mental discipline by systematic work in exact science.

The college year begins October 1, for all students; and closes the last week in June. Students of the first year are released June 17. Admission is not granted at any other time than at the opening of the college year, as students are instructed in classes in progressive order. It is especially difficult to make up for absence in the first week.

I. REQUIREMENTS FOR ADMISSION.

All applicants for admission must be at least sixteen years of age.

It is advisory to obtain at least a year of practical training in a drug store before entering the college course in pharmacy. The practice not gained before entering the School must be obtained after leaving it, as the required work leaves the student no time for an engagement in a drug store during the college year.

Persons over nineteen years of age, who bring evidence of having been engaged in the practice of pharmacy, in some capacity, for at least two years, may be admitted (for a part or the whole of the course) without an entrance examination; but they shall not be eligible for graduation until they have passed this examination.

Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of the collegiate grade, are admitted without further examination.

Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following branches:

1. **ENGLISH.**—Each candidate will be examined in the writing of English, correct in orthography, punctuation, the use of capitals, and grammatical construction; in the forms of correspondence; and in the correction of errors.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures. *Algebra.*—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

3. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book. Instead of Latin, German to the extent of a full year's study will be accepted. Those who have a speaking and reading acquaintance with German will be held to an examination in the grammar.

Other applicants will be examined in the following branches:

1. **ENGLISH.**—The same as given above.

2. **MATHEMATICS.**—*Arithmetic.*—The same as given above.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, and the use of Logarithms.

3. **LATIN OR GERMAN.**—The applicant may offer (1) three years of preparation in Latin; or (2) two years in Latin and one year in German; or (3) one year in Latin and two years in German. Those who offer three years of Latin will be examined in the *Grammar*—a thorough preparation in the elements; in *Prose Composition*—Jones's Exercises in Latin Prose Composition, or an equivalent in some other text-book; and in *Reading*—four books of Cæsar's Commentaries, and six select Orations of Cicero, or an equivalent amount in some other text-book. Those who offer two years of Latin will be examined as above, except in the Orations of Cicero. Those who offer one year of Latin will be examined on an amount equivalent to Jones's First Latin Book. Those who offer one year of German should have had daily recitations on the Grammar during that time, accompanied by weekly exercises in writing, and the reading of seventy-five pages of some German Reader. Those who offer two years of German should have devoted one year to the reading of some complete work of literary art.

4. **PHYSICS.**—Norton's Natural Philosophy, or an equivalent.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class-Book of Botany; also, an analysis and written description of fifty species of Phanerogams.

TIMES OF EXAMINATIONS.

An examination for admission will be held on Friday and Saturday, June 17 and 18, 1887, and another on Thursday and Friday, September 29 and 30. The examination will begin in each case at 9 A. M., on the first of the two days mentioned. Candidates may take their examination at either of these times, as they prefer.

II. COURSES OF INSTRUCTION.

STUDIES OF THE FIRST YEAR.

1. *Pharmacy.*—History of Pharmacopœias; Metrology and Chemical Problems; Operative Pharmacy and its Physical Principles; the Galenical Preparations; Official Standards of Strength and Purity; Heat and its uses.

2. *Chemical Physics and Inorganic Chemistry.*—Lectures with experimental illustrations, and use of text-books.

3. *Systematic Botany and Pharmacognosy.*—With fresh plants, and with the crude drugs of pharmaceutical commerce, in the hands of the student.

4. *Sanitary Science.*—Physiological action of foods and of medicines; Supply of water and air; Defences against contagions; Duties of health officers.

5. *Qualitative Chemical Analysis.*—Preparatory work on chemical notation, solubilities, formation of compounds, and chemical equations. Actual analyses, and study of oxidation and reduction, with notation by negative and positive bonds.

6. *Pharmacopœial Preparations.*—The minor operations of pharmacy; production of the galenicals—solid and fluid extracts and scale preparations; chemicals and distillations; extemporaneous pharmacy.

STUDIES OF THE SECOND YEAR.

7. *Materia Medica.*—Medicines, their classification, history, physiological effect and doses. Prescription-writing, language, and latinity; prescription-reading from actual files of the pharmacy.

8. *Practical Pharmacognosy.*—Recognition of crude drugs, chemicals, and preparations, in the hands of the student.

9. *Microscopical Botany*.—Structural botany of drugs, with drawings from the microscope by the student; identification of powders; detection of adulterations.

10. *Crystallography*.—Systematic crystallography applied to the recognition of chemicals.

11. *Organic Chemistry*.—The systematic chemistry of the carbon compounds, with experimental illustrations.

12. *Quantitative Chemical Analysis*.—(1) Specific gravity; (2) volumetric determinations; (3) gravimetric determinations; (4) gravimetric separations; (5) water analysis.

13. *Proximate Organic Analysis*.—Tests of identity; methods of separation; analysis of "secret medicines;" drug assays; valuation of foods.

14. *Pharmacy*.—Of inorganic and organic materials, in commercial sources, manufacture, uses, tests, and standards.

15. *Toxicology*.—Analyses for evidences of poisoning; recovery from the body. Legal procedures. The use of antidotes.

16. *Analysis of Urine*.—Normal and abnormal, by chemical, microscopical, and volumetric methods. Physiological and pathological indications.

HOURS OF COLLEGE WORK.

FIRST YEAR—FIRST SEMESTER.

HOURS.

- 7½ to 8¾ Course 5. Recitations and lectures. Daily.
 9 to 10 Course 1. Lectures and recitations. Daily.
 10 to 11 Course 4. Lectures. Tuesday and Thursday.
 12½ to 4¾ Course 5. Laboratory practice. Daily.
 4¾ to 5¾ Course 2. Lectures. Monday, Wednesday, and Friday.

SECOND SEMESTER.

(From beginning to March recess.)

- 8 to 9 Course 6. Recitations. Monday, Wednesday, and Friday.
 9 to 10 Course 5. Lectures and recitations. Daily.
 12½ to 5¾ Course 5. Laboratory practice. Daily.

(From March recess to end of semester.)

- 10 to 11 Course 3. Lectures and practical study in botany. Monday, Wednesday, and Friday.
 10 to 12 Course 8. Practical studies in museum. Tuesday and Thursday. (Two sections.)
 11 to 12 Course 6. Lectures and recitations. Monday, Wednesday, and Friday.
 12½ to 5¾ Course 6. Laboratory work. Daily.

SECOND YEAR—FIRST SEMESTER.

(From beginning to Christmas vacation.)

- 8 to 11 Course 9. Laboratory. Twice a week.
 9 to 10 Course 9. Lecture. Friday.

- 10 to 11 Course 11. Lectures. Monday, Wednesday, and Friday.
 10 to 12 Course 10. Lectures and practical study. Tuesday and Thursday. (Seven weeks.)
 11 to 12 Course 12. Lectures and recitations. Monday, Wednesday, and Friday.
 12½ to 4½ Course 12. Laboratory practice. Daily.
 4½ to 5½ Course 7. Recitations. Tuesday and Thursday.

(From Christmas vacation to end of semester.)

- 8 to 11 Course 9. Laboratory. Twice a week.
 9 to 10 Course 9. Lecture. Friday.
 10 to 11 Course 11. Lectures. Monday, Wednesday, and Friday.
 12½ to 4½ Course 16. Lectures. Three times a week.
 12½ to 4½ Course 16. Laboratory. Daily.
 4½ to 5½ Course 7. Recitations. Tuesday and Thursday.

SECOND SEMESTER.

(From beginning to March recess.)

- 8 to 10 Course 8. Lessons in museum. Tuesday and Thursday. (Two sections.)
 8 to 10 Thesis. Reading in Library. Monday, Wednesday, and Friday.
 10 to 11 Course 14. Lectures and recitations. Monday, Wednesday, and Friday.
 12½ to 5½ Course 15. Lectures and laboratory work. Daily.
 4½ to 5½ Course 7. Recitations. Tuesday and Thursday.

(From March recess to end of semester.)

- 8 to 9 Course 8. In museum.
 9 to 10 Course 14. Lectures and recitations. Daily.
 10 to 12 Thesis. Reading in library. Daily.
 12½ to 5½ Course 13. Lectures and laboratory. Daily till middle of May.
 12½ to 5½ Thesis. Laboratory work. Daily after middle of May.

III. EXAMINATIONS.

In each of the courses of instruction enumerated (1 to 16) examination is held at the time the work of the course is completed by the class. For the studies of the first year the principal examinations are held in February or March, and in June. For the second year, examinations are held in December, in February, in March, in May, and in June.

After the examination concluding any course of study, each student enrolled in the class is reported to the Faculty as being Passed, Conditionally Passed, Provisionally Passed, Not Passed, or Absent. The report is by no means based wholly upon the examination, but upon (1) standing in recitations through the course, (2) diligence and success in the laboratory work, and (3) standing in the examination. As soon after an examination as the report of the instructor is adopted by the Faculty at a regular meeting, the result is placed on record, and a certificate is given to the student. The adoption of a report of Passed gives credit for the completion of the study reported upon. If Conditionally Passed the student

must make up the condition imposed. A report of Not Passed requires the student to go over the regular exercises of the study again. A student Provisionally Passed is transferred from the immediate charge of the Instructor to that of the Faculty who will withhold credit until better scholarship is attained in other studies. A record of Provisionally Passed may be changed by the Faculty to a record of Passed, Conditionally Passed, or Not Passed, whenever such change shall be justified by the scholarship of the student in his studies in the school. Whenever the Faculty is satisfied that a student does not fulfill the purpose of his studies, he is informed, and his parents or guardians are advised, that he should leave the school. If the advice be not regarded it becomes the duty of the Faculty to take mandatory action.

IV. REQUIREMENTS FOR GRADUATION.

The degree of Pharmaceutical Chemist is conferred upon students who have completed the courses of required study, have obtained credit for examinations in these courses in the manner above stated, and have presented a satisfactory thesis.

The thesis must embody the results of research by the student under the direction of the Faculty. The subject is to be selected as early as the first of March. The investigations may consist in the determination of constants of nature, the correction of chemical formulæ and reactions, the chemical and micro botanical analysis of plants, the trial of methods of analysis or manufacture, the exposure of adulterations and concealed constituents, the collection of a cabinet, the compilation of a bibliographic index, or research in any branch of Pharmaceutical Chemistry. A comparison of authorities must be made, and the references given.

Experience in the business of pharmacy is not made a requirement for a degree.

V. POST-GRADUATE STUDIES AND A HIGHER DEGREE.

Extended facilities for advanced studies under instruction are given to graduates who take an additional year in the school. These facilities are adapted to preparation for service in manufacturing chemistry and pharmacy, or in any branch of analytical chemistry. The student elects such laboratory courses and other studies as will be most helpful to him in responsibilities for which

he desires to be qualified. Additional study in the Department of Literature, Science, and the Arts may be elected, if the Faculty find such additional work advisory. The following are among the available courses open to graduates from the School:

1. *Quantitative Analysis*.—Advanced quantitative work in any direction: iron and steel analysis, valuation of fertilizers, mineral waters, brines, etc.

2. *Organic Analysis*.—Proximate analysis, detection of adulterations, assays of drugs, valuation of foods, sanitary chemistry,—laboratory work and reading in the library. Ultimate organic analysis and preparations,—an organized course.

3. *Purification of Chemicals*.—An organized course of laboratory work, furnishing pure chemicals for use.

4. *Physiological Chemistry*.—A laboratory course. 5. *Pharmacology*.—Experimental work.

6. *Assaying of Ores*.—A course in class. Blow-pipe analysis of minerals,—a defined course. 7. *Metallurgy*.—Lectures.

8. *Experimental Researches*.—In manufacturing invention; in analytical methods; in the pure sciences. Bibliography of pharmaceutical chemistry.

A second degree is offered to resident graduates of this School upon the following requirements, viz., the accomplishment of original research, of an extent representing the average work of a full college year, and of sufficient ability and faithfulness. Applications will be accepted by the Faculty, from those who have already shown that they are adapted to engage successfully in investigations. A full record of the work, with citations of authorities, in form for publication, is required. Upon completion of the requirements, the degree of Master of Pharmacy will be conferred.

VI. TEXT-BOOKS AND BOOKS OF REFERENCE.

TEXT-BOOKS.

First Year.—In General Chemistry, the work of Roscoe and Schorlemmer is advised, and either Miller's Chemical Physics or Deschanel's Heat and Electricity. In Qualitative Analysis, Douglas and Prescott. In Pharmacy, the U. S. Pharmacopœia and Remington's Practice. In Botany, Gray's Lessons and Manual. In Pharmacognosy, Maisch's Organic Materia Medica. It is very desirable to have either the National Dispensatory, or the United States Dispensatory.

Second Year.—In *Materia Medica*, Farquarson. On Prescription Writing, Gerrish. In *Quantitative Analysis*, Cheever's *Select Methods*. In *Organic Chemistry*, Remsen. In *Organic Analysis*, Prescott. In *Physiological Chemistry*, Vaughan. Lyon's *Pharmaceutical Assaying* is advised.

Students who study in the same room may unite in the use of the dispensatory, and the works on general chemistry and chemical physics.

BOOKS OF REFERENCE.

These are provided in the General Library of the University. The following are among the most used:

Watts's *Dictionary of Chemistry*; Storer's *Dictionary of Solubilities*; Flueckiger and Hanbury's *Pharmacographia*; Proctor's *Pharmacy*; Oldberg and Wall's *Companion to the Pharmacopœia*; Hager's *Handbuch der Pharmaceutischen Praxis*, *Commentar*, and *Receptur-kunde*; Flueckiger's *Pharmaceutische Chemie*, and *Pharmacognosie*; Wittstein's *Pharmaceutische Preparete*; Hoffman's *Medicinal Chemicals*; Allen's *Commercial Organic Analysis*; Hassall's *Adulterations*; Carpenter's *Microscope*; Berg's *Anatomischer Atlas*; Bentley and Trimen's *Medicinal Plants*; Husemann's *Die Pflanzenstoffe*; Dragendorff's *Plant Analysis*; Wormley's *Micro-chemistry of Poisons*; Blyth's *Foods, and Poisons*; Woodman and Tidy's *Forensic Medicine*.

For the demands of original research all the important repositories of chemistry and pharmacy, including the principal periodicals, in complete sets, are accessible to the student. During the time devoted to the preparation of the Theses, students have direct access to an alcove supplied with about five hundred volumes of pharmaceutical literature, and other works can be obtained from the book room by calling for them.

VII. FEES AND EXPENSES.

For full information in regard to University fees and other expenses see page 27.

Letters of inquiry may be addressed to the Dean of the School of Pharmacy, Ann Arbor, Mich. A register of residences and occupations of the alumni is given in the special Annual Announcement of the School, which can be obtained on application to the Dean.

Homœopathic Medical College.

I. INTRODUCTION.

By an act of the Legislature in 1875 the Homœopathic Medical College was established as a Department of the University. The friends of homœopathy everywhere will be gratified to know that since the establishment of the College wise and liberal provisions have been made by successive legislatures for its maintenance and success. The object sought to be fulfilled by its establishment, namely, the thorough instruction of students in all subjects which pertain to medical science and art, and especially to the principles and art of homœopathy, has, it is believed, been satisfactorily accomplished.

The recent reorganization of the Faculty, on a permanent basis, will be an assurance to the profession of Michigan and to the friends and patrons of the college in other States, that the work commenced here twelve years ago will not be permitted to drag. With a determination on the part of the members of the Faculty to do all in their power to place the Homœopathic Department upon a basis which shall insure its continued and increased usefulness to the profession at large, and with the unusual attractions offered by the University itself to all who desire to obtain a sound and broad education, the future of this institution is one of great promise. The Faculty ask for the cordial support of the medical profession, and earnestly invite the attention of medical students to the inducements held out by this institution.

II. REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be at least eighteen years of age, must present to the Faculty satisfactory evidence of a good moral character, and must have sufficient primary education to

make good use of the advantages offered. To this end, students who are graduates of some accredited college, academy, or high-school, or who possess a teacher's certificate, qualifying them to teach in the common schools of the State in which they reside, will be admitted to this College upon presentation of such certificate to the Secretary of the Faculty. Those not presenting such certificates must submit to an examination, in writing, in the branches of a common-school English education.

ADMISSION OF WOMEN.

Women are admitted to this College, as to all other Departments of the University, on the same conditions which are required of men.

MATRICULATION EXAMINATION.

Examinations will be held at 2 P. M., on Thursday and Friday, September 29 and 30, 1887. Candidates are required to present themselves on one of these days, and they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidates to be present at this time, supplementary examinations will be held at such time as may be determined upon by the Faculty; but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination. Certificates of time are given only for the actual period of attendance.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one college year, and who possess superior qualifications, may be admitted, on examination, to advanced standing, and may attend such lectures and studies as shall be designated for their special course; but no student will be admitted to the final examination for

a degree who does not furnish satisfactory evidence of having studied medicine at least three college years, and who has not attended all the lectures required in the schedule of studies.

Students who have attended lectures in medical colleges in which homœopathic materia medica and therapeutics are not taught, and who wish to enter this Department with a view of taking its degree, after the close of the current college year will not be admitted to advanced standing without first giving evidence of possessing the requisite acquaintance with homœopathic materia medica and therapeutics.

III. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture-rooms in the order in which they pay their fees to the Treasurer, and according to the class they are to enter; and each student is expected to occupy, during the session, the seat selected. In the advanced lectures the graduating class, by courtesy, are allowed the privilege of the seats nearest the operating table and lecture desk. The same rule applies to the selection of seats in the Department of Medicine and Surgery.

IV. COURSE OF INSTRUCTION.

SURGERY.—A complete course of lectures will be given to freshmen on Minor Surgery and Bandaging.

The senior and junior classes will be combined, and will listen to a complete course of lectures on Operative Surgery, Fractures, and Dislocations, and on the Principles of Surgery.

Candidates for graduation will be required to demonstrate their knowledge of Operative Surgery by operations on the cadaver, a requisite number being provided by the authorities without expense to the class.

The chair of surgery will have an assistant, under whose direction attendants will be allowed to make the necessary preparations for operations and to assist, when assistance is required. Advanced students will be allowed to treat patients operated upon under the immediate supervision of the surgeon in charge.

MATERIA MEDICA.—The course in Materia Medica and Therapeutics will embrace the study of the toxic and physiological action of remedies, of experiments made upon the healthy, and a

careful study of symptomatology. Every effort will be made to present in its entirety each drug discussed, and to convey to the student a clear apprehension of its individuality. The making of drug-provings, critical analyses of provings made, and an inquiry into the relative merits of different methods of instituting drug-provings will also be had. Provings upon the healthy will be made by members of the class, under the instruction of the Professor of *Materia Medica*.

The regular course will consist of 108 lectures, so arranged that the classes, while listening to the same lectures, will do separate work. The freshmen will take a course of thirty-six hours in pharmacy, chiefly practical, in charge of the assistant to the chair of *materia medica*. The different classes will be quizzed by the assistant, at least once a week, upon the lectures heard during the preceding week, and each class will be examined in writing at the close of each semester.

OBSTETRICS, GYNÆCOLOGY, AND PÆDOLOGY.—It will be the object of the Faculty so to arrange the course in this department, that the freshmen and junior classes may be permitted to attend as many of the lectures as can be profitably studied with their knowledge of the primary branches of medicine; the course is thus arranged in order that the first and second year students may profit by the abundant clinical material provided. Gynæcological operations are, as a rule, performed in the presence of the entire class, but members of the senior class, or sections thereof, will be accorded the first privilege of witnessing or assisting in any operation when it is impracticable to perform the same in the presence of the entire class. In accordance with the graded course system, separate quizzes and examinations are given from time to time to the several classes and credits rendered to them accordingly. The close proximity of Ann Arbor to Detroit makes it possible to secure abundant obstetrical material at a comparatively low cost.

OPHTHALMOLOGY AND OROLOGY.—Regular lectures on this important specialty will be given during the term, amply illustrated from the abundance of clinical material at the disposal of the Faculty. The eye and ear clinic has assumed sufficiently large proportions to form one of the most interesting features of the clinical work done here, and to afford to the class every facility

for a thorough practical study of all the diseases of the eye and ear which come under the observation of the physician.

THEORY AND PRACTICE OF MEDICINE.—The course in Theory and Practice will embody a thorough discussion of the general subjects belonging to this chair, of the principles underlying homœopathic practice, and of their practical application. Due attention will be given to pathology, diagnosis, and the divisions of the science of medicine. No pains will be spared to make the student thoroughly familiar with homœopathic practice, and with the latest advances made in medicine.

The lectures will be fully illustrated by the medical clinic which will further be utilized for giving special instruction in physical diagnosis and in the use of the various diagnostic instruments now in vogue. Cases in the hospital will be assigned, from time to time, to the care of members of the senior class, thus affording them abundant opportunities for gaining bedside experience in the diagnosis and treatment of disease.

INSTITUTES OF HOMŒOPATHY.—In order to furnish thorough instruction in the distinctive features of homœopathic teaching and practice, a full course of lectures on the Institutes of Homœopathy will be given by the Professor of *Materia Medica*. These lectures will consist of a careful study of the *Organon* of Samuel Hahnemann, and of the principles of homœopathy as recognized by the authorities. This course will hereafter be obligatory upon all classes. The Faculty are so fully convinced of the necessity of such a course that they have urged upon the inter-collegiate committee of the American Institute of Homœopathy the wisdom of making provision for it in every college represented in the Institute.

Lectures will be delivered daily; and frequent examinations by the assistants to the several chairs will be had. The surgical, medical, and gynæcological clinics will be held twice a week, at which time examinations of patients are made by the Professors in charge, or by students under the direction of the Professors, prescriptions given, and surgical operations performed in the presence of the class. Owing to the abundance of clinical material, the eye-and-ear clinic will be held on separate days, of which the profes-

sion throughout the State will be duly notified. Until otherwise announced, the eye-and-ear clinic will be held on Monday and Friday; other clinics on Wednesday and Saturday forenoon.

SCHEDULE.

The general plan of study covering the entire course of three years is given in the following schedule:

SCHEDULE OF STUDIES.

SUBJECTS.	Number of Courses required.	Number of Lectures in each Course.	Number of Lectures to be attended.	REMARKS.
Anatomy—Descriptive	2	90	180	*Delivered in Anatomical Amphitheatre.
Anatomy—Surgical				*One lecture a week in General Lecture Room.
Embryology—Comparative				*In Anatomical Amphitheatre, with Illustrations.
Anatomy—Practical	1			*Requiring twelve weeks of afternoon work in the Dissecting Rooms.
Physiology	2	80	160	*Didactic Lectures in Amphitheatre, with Illustrations.
Physiology				*A special course of Laboratory work in Physiology is offered to the second year class (Optional)
Study of Bacteria	1	10	10	*In General Lecture Room.
Histology and Microscopy	1	40	40	*In General Lecture Room.
Histology, with practical use of Microscope, Mounting, etc				*In sections in the Histological Laboratory. Fifteen lessons of afternoon work
Botany	1	20	20	In the Department of Literature, Science, and the Arts.
Pathological Anatomy	1	30	30	*In Amphitheatre, with Illustrations.
General Chemistry	2	48	96	*In General Lecture Room, with Illustrations.
Organic Chemistry	2	25	50	*In General Lecture Room.
Pathological Chemistry				*Continuing through college year. (Optional).
Qualitative Chemistry	1			*Requiring twelve weeks of afternoon work in the Chemical Laboratory.
Analysis of Urine	1			*Requiring twelve weeks of afternoon work in the Chemical Laboratory.
An Extended Course—Analysis and Toxicology				*Continuing through college year in Laboratory. (Optional).
Zoology and Physics				Instruction given in the Department of Literature, Science, and Arts. (Optional).
Electro-Therapeutics	1	20	20	*Twelve lessons—practice with Instrument in Laboratory.
Sanitary Science	1	20	20	*In General Lecture Room.
Obstetrics	2	60	120	In General Lecture Room.
Diseases of Women and Children	2	60	120	In General Lecture Room.
Clinical Gynecology and Diseases of Children	2	60	120	In Amphitheatre, supplemented in Hospital.
Materia Medica	3	108	324	In General Lecture Room.
Preparation of Medicines	1	36	36	
Principles of Surgery	2	60	120	In General Lecture Room.
Clinical Surgery	2	60	120	In Amphitheatre, supplemented in Hospital.
Minor Surgery	1	36	36	In General Lecture Room.
Minor Surgical Gynecology	1	36	36	In General Lecture Room.
Spinal Diseases and Curvatures				In Spinal Curvature Room.
Principles and Practice	2	60	120	In General Lecture Room.
Clinical Medicine and Differential Diagnosis	2	60	120	In General Lecture Room.
Operative Surgery				In Amphitheatre, supplemented in Hospital.
Institutes of Homoeopathy	2	36	72	In General Lecture Room.
Medical Jurisprudence	1	20	20	In the Department of Law, and in the General Lecture room.
Ophthalmology and Otology	1	24	24	In General Lecture Room.
Clinical Ophthalmology and Otology	1	36	36	In Amphitheatre, supplemented in Hospital.
Practical Demonstrations in Obstetrics				In Hospital.

*Department of Medicine and Surgery.

*Chemical Laboratory.

Two extended special courses have also been established, one in Physiological and Pathological Chemistry, and another in Toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscles, and other fluids and solids of the body. The second embraces courses in Qualitative and Quantitative Analysis, and the special examination of foods, and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of Laboratory work. Students willing to devote time to *original work* in Physiological Chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in Quantitative Analysis and in Pharmaceutical Preparations are also open to students of medicine who may desire such special training.

EXAMINATIONS.

At the end of each semester, examinations are held by the several professors, or their assistants, on all subjects previously taught, and the grade of each student is entered upon the records of the Faculty. Each student who does not come up to the required standard is notified of his failure, and opportunity is given him to prepare for a second examination upon the subjects wherein he has failed, in order that he may enter upon the advanced studies of the next semester.

The final examinations are conducted, in part at least, in writing. All examinations for the degree are conducted by the Faculty.

V. REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have successfully pursued the study of medicine for the period of three years, including the time spent in attendance upon lectures. He must have attended at least seventy-five per cent. of the regular lectures, must have spent the required time in practical anatomy, chemical analysis, etc., in the various laboratories and hospitals, and must have attended the usual quizzes and drills by the assistants of the several chairs. He must also have passed satisfactory examinations on all the studies included in the curriculum; or, if admitted to advanced standing, he must have attended at least two full courses of medical lectures, the last of

which was at this college, and must have passed the required examinations.

Students who, in the first year, are allowed by a special vote of the Faculty to take all the lectures of which two courses are required, and who also take a suitable number of those required but once, may, after examination, obtain permission to pursue their studies with a competent preceptor out of the College during their second year, and, after completing the course required by strict attendance during the full third year, may present themselves for examination for the degree at the end of that year.

Students who have completed full college courses for the first and second years in an accredited medical college will be permitted, upon examination, to enter the third year and complete the studies of that year in this College, and to present themselves for examination for the degree at the end of the year.

Students who have attended one full course of lectures in an accredited medical college previous to 1880 will be admitted to advanced standing in the course required in this College, and may be graduated on the conditions in force prior to that date.

All candidates for graduation must present to the Secretary time-certificates from the Secretary of the Faculty of the Department of Medicine and Surgery, showing what lectures and studies they have attended in that Department.

VI. SPECIAL FACILITIES FOR INSTRUCTION.

The unsurpassed facilities offered by the University of Michigan for thorough study and for original work in various directions are in themselves worthy the serious consideration of all medical students.

The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, and pathology. The facilities for the study of chemistry, afforded by the Chemical Laboratory, are not excelled in any medical college in this country, and the arrangements of the laboratory work are such that medical students, in classes, and working under the direction of the Professor in charge, receive practical instruction in the courses on qualitative chemistry, and in the analysis of urine, a knowledge of which has become absolutely indispensable to the

successful physician. The Histological Laboratory, with its collection of microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and in histology. In addition to these, students have free access to the general and special cabinets of the University, containing some 255,000 specimens. The scientific and philosophical lectures, collateral to medicine, given in the Department of Literature, Science, and the Arts, are also open to them.

The Homœopathic College, in addition, possesses the valuable collections of anatomical and pathological specimens presented to it by Dr. J. N. Eckel, of San Francisco, Cal., and Dr. A. I. Sawyer, of Monroe, Mich.; these, already comprising much valuable material, are constantly growing in importance through contributions from friends of this institution.

The lecture room and amphitheatre are arranged conveniently, have ample seating capacity, and embody the conveniences and necessities which are essential points to the teacher and students.

The hospital, built and thoroughly equipped by act of the legislature, is in charge of a competent resident medical officer and an experienced matron; it is provided with a corps of trained nurses, wards for male and female patients, special rooms for antiseptic surgery, dispensary, etc., all of these under the immediate direction of the Faculty, the members of which attend upon the sick in the hospital, and draw from them the material for the clinical instruction of the class.

The clinical advantages offered by the Homœopathic Medical College of the University of Michigan are more than ample to meet the demands of any school. Although not placed in the midst of a populous city, the college has had no difficulty in securing all the clinical material which could be exhausted, embracing almost every pathological condition likely to occur in daily practice, and a great variety of rare cases and of surgical operations of unusual importance.

VI. TEXT-BOOKS AND BOOKS OF REFERENCE.

Any one of the following text-books in each department will answer the necessities of the student; and, wherever a preference exists, it is given to the one first in order on the list.

ANATOMY.—Gray, Wilson, Leidy, Darling, Stricker.

PHYSIOLOGY.—Dalton, Martin, Foster. *For Reference.*—Carpenter, Sanderson's Handbook for the Physiological Laboratory, Foster and Langley's Practical Physiology.

CHEMISTRY.—*General Chemistry.*—Miller's Chemical Physics, Miller's Inorganic Chemistry, Eliot and Storer's Manual of Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry, Vaughan's Physiological Chemistry, Wormley on Poisons.

MATERIA MEDICA AND THERAPEUTICS.—Hahnemann's *Materia Medica Pura* (translated by R. E. Dudgeon, M. D.), Dunham's Lectures, Hempel and Arndt: *Materia Medica and Therapeutics*, Hughes: *Manual of Pharmacodynamics*.

PHARMACY.—O'Connor's American Homœopathic Pharmacopœia.

INSTITUTES OF HOMŒOPATHY.—Hahnemann's *Organon* (Wesselschefts translation).

BOTANY.—Gray's Manual.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Wagner, Green, Rindfleisch, Billroth, Paget, Williams's Principles. *For Reference.*—Rokitansky, Virchow.

DISEASES OF WOMEN.—Emmet, Ludlam, Hart and Barbour, Thomas, Shraeder.

OBSTETRICS.—Lusk, Gallabin, Leavitt, Playfair. *For Reference.*—Cazeaux and Tarnier.

DISEASES OF CHILDREN.—Härtmann, Teste, Eustace Smith, Edmunds. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood, Wilson on the Nervous Diseases of Childhood, Routh on Infant Feeding.

THEORY AND PRACTICE.—Arndt's System of Medicine, Raue, Hughes, Lilienthal, Clapp on Auscultation and Percussion, Da Costa on Medical Diagnosis, Loomis on Physical Diagnosis, and Bulkley's Handbook of Skin Diseases.

SURGERY.—Helmuth, Gilchrist, Hamilton, Erichsen. *Special Subjects.*—Hamilton on Fractures and Dislocations, Keyes on Venereal Diseases, Sayre on Club Foot, Otis on the Genito-Urinary Diseases, Ranney on Surgical Diagnosis. *Minor Surgery and Surgical Appliances.*—Gilchrist, Hamilton, Heath.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Angell, Norton, Wolfe, Buffum, Soelberg Wells, Stellwag, Schweiger, Metz. *On the Ear.*—Winslow, Cooper, Roosa, Toynbee (with Hinton's Supplement).

URINARY PHYSIOLOGY AND PATHOLOGY.—Vaughan, Hassall, Beale, Parkes, Thudichum, Neubauer, Vogel.

PHYSIOLOGICAL CHEMISTRY.—Brunton's Handbook for the Physiological Laboratory, Thudichum's Manual of Chemical Physiology. *For Reference.*—Lehmann's Physiological Chemistry.

ELECTRO-THERAPEUTICS AND ELECTRO SURGERY.—Beard and Rockwell, Butler.

VII. FEES AND EXPENSES.*

MATRICULATION FEE.—For residents of Michigan, *ten dollars*; for non-residents, *twenty-five dollars*.

ANNUAL FEE.—For residents of Michigan, *twenty-five dollars*; for non-residents, *thirty-five dollars*.

GRADUATION FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of ten dollars an extremity is made for material used in dissection.

LABORATORY EXPENSES.—These will vary with the prudence and economy of the student. For the courses in the Chemical Laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the Histological Laboratory. A charge of *one dollar* is made to students who take the course in Electro-Therapeutics.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this College, may be permitted such attendance on the payment of the matriculation fee only.

There are neither dormitories nor commons connected with the University. Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of good board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student.

ESTIMATE OF FEES.

College Fee, first year.....	Residents of Michigan, \$	35	Non-Residents, \$	60
" " second year.....	" " "	25	" "	35
" " third year.....	" " "	25	" "	35
Total Fees for three years.....	" " "	\$ 85	" "	\$ 130
Graduation Fee.....	" " "	10	" "	10

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents. For further information in regard to expenses, see page 27.

Letters of inquiry may be addressed to the Dean of the Homœopathic Medical College, Ann Arbor, Michigan.

Students arriving at Ann Arbor, and desiring further information, should apply at the office of the Faculty, in the Homœopathic Hospital Building, North University Avenue. The office will be open daily during the last week in September, and members of the Faculty or the Resident Surgeon will be in attendance. Office hours of the Dean, from 9 to 11 A. M.; office hours of the Secretary, from 3 to 5 P. M.

College of Dental Surgery.

The thirteenth annual course of instruction in the College will begin October 1st, 1887, and continue until the last Thursday of June, 1888. There will be a recess of about two weeks during the holidays. The regular course of instruction begins promptly at the opening of the term.

I. REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the University, or a graduate of some recognized college, academy, or high school, every candidate must be examined as to his previous education and his fitness to appreciate the technical study of Dentistry. The examination will be chiefly in writing, and will embrace the usual branches of an English education. In order to secure release from this examination, the candidate must present his diploma or certificate of graduation. It is also strongly recommended that the applicant possess at least such a knowledge of Latin as may be attained by one year's study, say the ability to read the first two books of Cæsar; or such a knowledge of the German language as can be secured by one year's study under good instruction. The above named preparation in Latin or in German may be made a requirement at an early date.

Examinations will be held in Ann Arbor on Friday, September 30, 1887. Candidates are expected to be present at that time. To provide for cases in which it is impossible for the applicant to be present, supplementary examinations will be held at such times as may be determined by the Faculty.

Arrangements have also been made, whereby admission examinations are conducted at any time designated by the examiners, between June 1 and September 20 of each year, at the places and by the persons named below:

Dr. W. St. Geo. Elliott, No 29 Upper Brook St., London W., England.

Dr. John. S. Marshall, 242 Wabash Ave., Chicago, Ill.

Dr. J. G. Friederichs, No. 155 St. Charles St., New Orleans, La.

Dr. E. G. Betty, Cincinnati, Ohio.

Dr. J. G. Templeton, 299 Penn Ave., Pittsburg, Pa.

Before admission to examination every student is required to present to the Dean of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in this College, and pay his fee to the Treasurer. In case of rejection, the money paid, preliminary to examination, will be refunded.

Students are allowed to select seats in the lecture rooms and places in the Dental Laboratory in the order in which they matriculate; and each student is expected to occupy the seat selected during the session.

II. COURSE OF INSTRUCTION.

In the arrangement of the course of study it is the aim to make it such as will meet the requirements of the student and the expectations of the profession, and secure the greatest benefit to the public. It is generally conceded that graded and progressive work promises the best results in education. Though the term has been extended to nine months, some, and it is hoped many, will prefer to take three terms for the thorough mastery of the subject of the course. When a three term course is elected, a change will not be permitted, except with the unanimous consent of the Faculty. In order to meet the requirements, the following schedule making a three years' course, is presented and strongly recommended:

FIRST YEAR.—Anatomy, Physiology, General Chemistry, Prosthetic Dentistry, Metallurgy, and Histology.

SECOND YEAR.—Review of the First Year's Studies, Theory and Practice of Dentistry, Principles of Surgery, Materia Medica, Dissections, Analytical Chemistry, and Histological Laboratory.

THIRD YEAR.—Theory and Practice of Dentistry, Clinical Dentistry, Pathology, Therapeutics, Oral Surgery, and Diseases of Women and Children in relation to oral affections.

At the middle of the second year the student may be admitted to an examination on Anatomy, Physiology, General Chemistry, and Prosthetic Dentistry. Prior to this he must make two or more satisfactory practical dentures; he must also present for examination a denture or appliance as evidence of skill that shall be acceptable to the Faculty. At the end of the second year, an examination is required upon the principles of Pathology, Materia Medica, Histology, and Analytical Chemistry. During or at the end of the third year examinations are made upon all the branches not previously disposed of; and additional proofs of skill and ability may be required at the discretion of the Faculty.

For those who may find it necessary to complete their course in two years, the following scheme has been prepared:

FIRST YEAR.—Anatomy, Physiology, Dissections (during the holidays), General Chemistry, Theory and Practice of Dentistry, Prosthetic Dentistry, Principles of Surgery, Materia Medica, Histology and Histological Laboratory, and Metallurgy.

SECOND YEAR.—Anatomy, Physiology, Pathology, Theory and Practice of Dentistry, Clinical Dentistry, Analytical Chemistry, Oral Surgery, Therapeutics, Diseases of Women and Children.

At the end of the first year there will be a preliminary examination in Anatomy, Physiology, Prosthetic Dentistry, and Metallurgy.

Students in dentistry take such of their lectures as are given in the Department of Medicine and Surgery, in connection with the regular classes in that Department. The facilities there offered for the satisfactory study of all branches common to general medicine and dentistry are full and complete. The advantages offered by a fully equipped medical college are of the first importance to the student of dental science, and attendance upon at least one entire course of medical lectures may properly be regarded as the true foundation for the study of dentistry.

In addition to what is stated above, a special course, embracing Oral Surgery and Pathology, and Therapeutics in its application to dental practice, is given in the College of Dental Surgery.

Anatomy, the groundwork of our science, is studied didactically and practically. Besides the full course on general anatomy, which the students attend with the medical class, special instruc-

tion is given in the anatomy and histology of all that pertains to the oral apparatus, embracing also particular attention to *comparative* dental anatomy.

All candidates for graduation are required to take a course in the Histological Laboratory. In this course the principal structures and tissues of the animal body are studied in detail, and special attention is given to their pathology, including the minute study of the new formations. The course not only gives the student a knowledge of animal structures and tissues, but makes him familiar with the workings and uses of the microscope.

In view of the important part chemical agents and processes play in the dentist's laboratory and operating room, and the marked influence they have in diseases of the teeth and associated parts, students are required to attend lectures on Inorganic and Organic Chemistry. They also have the advantages of the Chemical Laboratory, for the practical study of all those agents or secretions that concern their future needs in the prevention and cure of disease. A course in analysis of saliva is required, and analysis of urine is made optional to the student.

Under the head of *Materia Medica* and Therapeutics, are brought in review all the remedial agents the dentist will need to use, with the fundamental principles which will guide their application in practice. The instruction in this branch consists of the lectures given in the Department of Medicine and Surgery, together with special lectures on dental medicine.

The instruction in Pathology and the Practice of Medicine, furnishes ample means for becoming acquainted not only with the principles, but with the details of practice.

A complete course in Surgery, both didactic and clinical, is given, which will fully meet the dentist's needs,—embracing the discussion and presentation of surgical diseases, as well as the underlying principles of surgical practice wherever applied.

Knowing how seriously the conditions of maternity often disturb the system, the dental student will be profited by the instruction given in the lectures on gynecology. The diseases of children, also, as affecting dentition, and as affected by it, should receive special attention by the dental student.

In the course on the Theory and Practice of Dentistry, the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation as well as restoration to health when diseased, are presented. This instruction applies not only to the various affections of the teeth and contiguous parts, but to the character and application of remedial agents, and to the various approved methods of operating, with all the details of conditions, materials, instruments, and appliances. The student is required to make his attainments thorough in all these particulars, in order that he may not be at a loss for a guide in his treatment and manipulation.

In Clinical Dentistry the most thorough practical instruction in details of operations, and in the preparation of the instruments and appliances used, is given. The rooms are ample and well arranged, and supplied with operating chairs and other requisite facilities. All valuable appliances will be made available, and instruction in their use given. Each member of the senior class must have a dental engine. Every member of the senior class is required to spend a part of each day in the clinic room.

The instruction in Prosthetic Dentistry embraces everything necessary to enable the dentist successfully to supply substitutes for lost dental organs. Special reference is had to the principles involved in the restoration of the natural functions of the teeth, viz., mastication, speech, and expression of features, keeping in view always the health and future usefulness of the living parts. Practical and valuable modes only are taught, and no time is wasted upon worthless and obsolete styles.

Those who have Laboratory tools and appliances should bring them; those who have not, are advised to defer purchasing till they arrive, as they will then have the aid of the teachers in making proper selections. Each student, before beginning his work, is required to procure the tools and appliances necessary for his own use, a list of which will be furnished him.

Particular attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

III. REQUIREMENTS FOR GRADUATION.

The candidate for graduation must be twenty-one years of age; must possess a good moral character; must have devoted three years to the study of dentistry, and have made such attainments in all the branches of the course of study, as shall be satisfactory to the Faculty; and must have attended two full courses of lectures in this college; and we recommend, that he attend these consecutively.

Students who are allowed to enter after the beginning of the session will be required to attend, before graduation, two full courses, in addition to the fractional course. However, one course in any other dental college having an equal or similar standard of requirements to this, will be accepted as an equivalent to one course here. But all applicants offering such an equivalent shall, at the option of the Faculty, submit to a preliminary examination.

A graduate of the Department of Medicine and Surgery may enter this College, and, if found qualified, may graduate after two years have been devoted to the study of dentistry, including the courses of lectures.

Every candidate will be required to write from time to time upon the various branches of his course, and may at the discretion of the Faculty be required to prepare a thesis upon some assigned topic; he must present for inspection practical operations performed by himself in this College, and give evidence, satisfactory to the Faculty, of his skill and ability in treating the derangements, in all the branches taught.

The diploma is accepted by the English Board of Registration under the new Dental Act, so that graduates of this College can practice dentistry in Great Britain without further examination.

Certificates of attendance are given for the actual period of attendance only.

IV. FACILITIES FOR INSTRUCTION.

The Dental Museum is supplied with a large number of preparations, illustrating Anatomy, Physiology, Pathology, and Histology, including a series illustrating dentition from infancy to the completion of the process in the adult, and the normal changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facili-

tate the study of the nervous and vascular systems. The design is to make every practicable appliance in this direction available.

In addition to the above, the Museum of Anatomy and Materia Medica is rich in material to aid the student. The Museum is always open to students, and the collections are constantly used in illustrating lectures. The Museum of Natural History, which contains more than 250,000 specimens, is also accessible to all who desire its advantages.

The Chemical and Histological Laboratories are well furnished with all needed apparatus for instruction and research. These Laboratories are open throughout the term.

The University Library is open daily, and offers its advantages to all who desire to use it. It contains the Medical Library, comprising about 3,000 volumes. A library of dental science, containing almost every known work on this specialty, is also accessible to the students.

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the Department of Literature, Science, and the Arts.

POST GRADUATE WORK.

So often, and with such interest, have inquiries been made as to the facilities for post graduate study and work, that it has been thought advisable to open the way, and afford such facilities as may be practicable, for the accommodation of those who are prepared, and desire to take such work. A circular, giving the regulations, and outlining the work, that may be pursued, will be sent to any one desiring it, upon application to the Dean.

V. TEXT-BOOKS.

ANATOMY.—Gray.	METALLURGY.—Essig.
PHYSIOLOGY.—Dalton, Foster, Martin.	PROSTHETIC DENTISTRY.—Richardson.
HISTOLOGY.—Stowell, Frey.	ORAL DEFORMITIES.—Kingsley.
PATHOLOGY.—Wagner.	CHEMISTRY.—Miller.
DENTAL PATHOLOGY.—Wedl.	PRACTICAL CHEMISTRY.—Prescott.
ORAL SURGERY.—Garretson.	THERAPEUTICS.—Bartholow, Gorgas.
OPERATIVE DENTISTRY.—Taft, Harris.	MEDICAL DICTIONARY.—Thomas.
	DENTAL DICTIONARY.—Harris.

VI. FEES AND EXPENSES.

RESIDENTS OF MICHIGAN.—Matriculation fee, \$10; annual fee \$25.

NON-RESIDENTS.—Matriculation fee, \$25; annual fee, \$35.

GRADUATION FEE.—For all alike, \$10.

The matriculation fee is paid but once, and entitles the student to the privileges of permanent membership in the University. The annual fee is paid the first year, and every year of subsequent attendance at the University. A By-Law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees.

The expenses for Dental Laboratory tools are about \$30.00. Incidentals, gas, teeth, &c., are estimated at \$15.00. All of these will be furnished at the College under the direction of the Faculty.

EXPENSES IN CHEMICAL LABORATORY.—It is the design of the Regents that the chemicals and apparatus actually consumed in the individual manipulations of the student shall be paid for by him. With this view, the student on entering the Laboratory makes a deposit of ten dollars; a complete set of apparatus is then inventoried to him, and from time to time additional supplies are furnished. An accurate account is kept. On leaving the Laboratory he is credited with what remains unconsumed, and the balance is struck. All supplies are furnished the student at the printed price-current of New York dealers. The average Laboratory expenses are about one dollar and twenty cents a week for all courses.

Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office.

The expenses of the Dental Student are from two hundred to two hundred and fifty dollars for a term of nine months.

Those desiring further information concerning the College of Dental Surgery, may address J. TAFT, Dean, Ann Arbor, Mich.

List of Graduates of 1886.

DEGREES CONFERRED.

BACHELOR OF LETTERS.

Albert Levi Arner,	Elisha Monroe Hartman,
Ada Electa Ferguson,	Alexander Fraser McEwan,
Edward Leroy Parmenter, Jr.	

BACHELOR OF SCIENCE.

[IN BIOLOGY.]

Charles Wright Dodge,	Erwin F. Smith.
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BACHELOR OF SCIENCE.

[IN CHEMISTRY.]

Edward Demill Campbell,	Louis Munroe Dennis, Ph. B.,
Frederick George Novy.	

BACHELOR OF SCIENCE.

[IN MINING ENGINEERING.]

Lewis Ezra Dunham,	Burt McDonald.
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BACHELOR OF SCIENCE.

[IN MECHANICAL ENGINEERING.]

Clifford Chester Smith.

BACHELOR OF SCIENCE.

[IN CIVIL ENGINEERING.]

Raymond Walter Beach,	Louis Clarence Hill,
William Wallace Campbell,	William Clarence King,
Fred Goodrich Frink,	Fred Morley,
Leslie Warren Goddard,	George Rosen Simpson,
Howard George Hetzler,	Ernest Stenger.

BACHELOR OF SCIENCE.

[IN GENERAL SCIENCE.]

Charles Erwin Bruce,	Luella Belle Foss,
Mary Climie,	Albert Cotton Grier,
Nathan Davis Corbin,	Wilber Fisk Jackman,
Frederick Wiley Stevens.	

BACHELOR OF PHILOSOPHY.

Franklin Augustus Ainsworth,	Ross LeHunte Mahon,
Nellie Elizabeth Bancroft,	Josiah McRoberts,
Harriet Alice Chipman,	William Morgan Odell,
Claus Siem Claussen,	Kate Orr,
Fannie G. Kahn,	Helen Lucy Osgood,
Caroline E. Lorman,	Edwin Frank Saunders,
Frank Louis Weaver.	

BACHELOR OF ARTS.

Charles Lincoln Andrews,	Fred Bruce Hollenbeck,
Martin Darrelle Atkins,	George Francis James,
Monroe D. Baker,	John Nelson James,
Walter Bond Bliss,	Andrew Stewart Lobingier,
Herbert Eugene Boynton,	Elmer Adelbert Lyman,
Edson Pratt Bradley,	William Andrew McAndrew,
Edward Caldwell,	William McCracken,
William Whiting Chapin,	Alice Parks,
Frank Alfred Clary,	Edwin Deppen Peifer,
Minnie Louise Converse,	Herman Joseph Powell,
Ira George Curry,	George Lanphere Price,
Nettie Chloe Daniels,	Henry Abbott Reynolds,
Nat Earl Degen,	Sarah Elizabeth Satterthwaite,
Elwood Frank Demmon,	Clyde William Smith,
Robert Neil Dickman,	Hiram Allen Sober,
George Philip Fleisher,	Grant Byron Swisher,
Joseph Ganahl, Jr.,	Orla Benedict Taylor,
William Marshall Giller,	Henry Silas Tibbits,
Elizabeth Portia Goodson,	Samuel Brown Todd,
Myron Oscar Graves,	Eliza Putnam Underwood,
Wilber James Gregory,	Belmont Waples,
Clara Viets Grover,	Frank Day Wells,
James Grant Hays,	Chauncey Alvan Wheeler,
Jonathan Heaton,	Fred Bishop Wixson,
Fredrick Charles Hicks,	Frederick Thompson Wright.

MASTER OF ARTS.

Thomas Bertrand Bronson, A. B.,	Mary Emilie Holmes, A. B.,
Webster Cook, A. B.,	Lewis Addison Rhoades, A. B.

DOCTOR OF PHILOSOPHY.

Edward Playfair Anderson, A. M., Douglas Houghton Campbell, Ph. M.,
J. Rose Colby, A. M.

DOCTOR OF MEDICINE.

[DEPARTMENT OF MEDICINE AND SURGERY.]

Frank Seth Armitage,
Achbor Jehu Baker,
Florence Adell Belknap,
John Albert Bobb,
Fred Nathaniel Bonine,
Teunis Ardenne Boot,
Edward Lincoln Bower,
Esther Clara Herrick Brooks,
Belno Addison Brown,
Heman Hampton Brown,
Rose Standish Bryan,
Lawrence Byron,
Rosalie Armstrong Chadbourne,
Edmund Conley,
Mary Catherine Cook,
Mary Helen Cullings,
Byron Francis Dawson,
Charles Richard Dewey,
Wealthy Desire Dibble,
Harley Mitchell Dunlap,
Jacob Asher Fink,
Charles George Forbes,
John Calvin Frets,
Miriam Gardner,
Walter Harding,
Elmer Ellsworth Hendershott,
Emily Alice Hill,
Sarah C. Hills,
Wilmer Brown Hoge,
William Henry Hood,
Frank Howe Hovey,
Edwin J. Howe,
Enos John Hughes,
Jesse Butler Hull,
Samuel Adams Jackson,
Thomas Smith Kingston,
Oliver Almond LaCrone,
Frederick Lohrstorfer,

Frank Wilson Martin,
Mary Simpson McCarty,
Daniel McEacheran,
Edward L. Mooney,
William Phipps Munn,
Frank Neely,
Louis Delevan Niles,
Charles Eugene Norris,
John Edward Ottaway,
Johannes Abraham Otte,
Edward B. Patterson,
Charles Birdsall Pearson,
William Crosby Riddell,
William H. Riley,
Dana Chapman Rood,
Frank Lisle Rose,
Hannah Cullombine Rous,
John Henry Seiler,
Warren Bradford Sexton,
Frank Edward Victor Shore,
William Forsyth Shorts,
Nobyoshi H. Shirafji,
Harry Austin Sifton,
Lois Hepsy Stoddard,
Thomas A. Stoddard,
Mary Elizabeth Strain,
John Hubert Swanson,
Fred Adelbert Swartwood,
George Robert Taylor,
James Bricker Tedrow,
Mary Glover Thompson,
Mary Rosetta Thompson,
Fred Arthur Todd,
Cora Alfretta Turner,
Albert Mason Tyler,
James Townley Upjohn,
Glenn Bee Venable,
Joseph Adam Weitz,

Martha Elizabeth Lough,
 Horace Mandel, Lowe,
 Harry Arthur March,

Jacob Wile, Jr.,
 Florida Belle Williams,
 Harry Almon Wood,

Scott Percy Woodin.

BACHELOR OF LAWS.

Ralph Leonard Aldrich,
 Michael Edward Ames,
 Stanley Corwin Andrews,
 Asahel George Avery,
 Lincoln Avery,
 Patrick Joseph Bannon,
 Archibald Mechling Blakely,
 Frank Lord Boyd,
 George Andrew Callinan Brady,
 John Irwin Breck,
 Noah Harrison Browning,
 William Henry Brunson,
 Lettie Lavilla Burlingame,
 Charles Henry Carlson,
 Louis Grant Carpenter,
 John Wharton Clark,
 William Millian Clary,
 James Albert Crawford,
 George Boyer Creveling,
 James Edmund Cross,
 Alfred Owen Crozier,
 George Zophar Dimmitt,
 Alpheus Edwin Doe,
 Charles Dresbach,
 Benjamin Woodbury Driggs, Jr.,
 Charles Henry Dudley,
 Francis Edward Durning,
 John Myron Edgerton,
 Robert Emory Evans,
 Alfred Wallingford Farrar,
 John Adam Gallup,
 Leonard Bertin Gardner,
 Edwin Clendenin Garrigues,
 Henry Clarke Gilbert,
 Joseph Buckner Gill,
 John Wealey Gillespie,
 Delbert James Haff,
 William Henri Haggerty,
 Charles Brook Hamble,

James Marshall Lawson,
 Roger Miller Lee,
 Frank Nathaniel Lufkin,
 George Alexander Lukehart,
 Harry Silvis Lydick,
 William Lewis Marquardt,
 James Charles Martin,
 Norman Thickstun Mason,
 William Luther Mason,
 Calvin Dexter May,
 William Arthur Frank May,
 William Archibald McDonald,
 John Webster McKenzie,
 Alonzo B. McMillen,
 James McNamara,
 Tom Henry McNeil,
 Walter Scott Meeker,
 Mary Merrill,
 Henry David Merithew,
 Charles Frederic Miller,
 Edward Charles Miller,
 Volney Miller,
 John T. Moffit,
 George Ladd Munn,
 Henry William Nieman,
 Robert Allen Nye,
 Rollo Blakesley Oglesbee,
 John Michael Opsahl,
 William Claiborne Overton,
 Charles Edward Peele,
 Rupert Tarpley Pickens,
 George Gregg Prewitt,
 Henry Saint Rayner,
 Charles Matloche Rice,
 Granville Addison Richardson,
 John Charles Richter, Jr.,
 James Scouton,
 Kelly Stephen Searl,
 Charles Edward Servis,

James William Hamilton,
 Elias N. Hartman,
 Thomas Davis Healy,
 Ambrose Edgel Helmick,
 George Everard Hibner,
 Francis Grant Higgins,
 Edward Everett Hogg,
 Frank Hooper,
 Frank M. Hostetter,
 Jacob Warren Houder,
 Edward Everett Hull,
 Charles Mark Humphrey,
 Isaac Newton Huntsberger,
 Yasnoskéh Ishii,
 James Gladstone Jolly,
 Winthrop Reed Kendall,
 Charles Henry Kline,
 Milton Kraus,
 Jason Gordon Lamison,

John Clarence Shaw,
 Frederick Bemister Shepherd,
 Allen Shewmon,
 Benjamin Franklin Shively,
 Brown Sylvester Smith,
 Ezra Smith,
 James Gabriel Smith,
 William James Spears,
 Marline Bingham Stephens,
 Joseph Henderson Stewart,
 John Emmett Sullivan,
 William Harvey Talcott,
 Oris Columbus Tarpenning,
 Zeb Vance Walser,
 William Worth Wendell,
 Thomas Burchard White,
 Augustus W. Wolfe,
 Arthur Creighton Wright,
 Francis Wright.

PHARMACEUTICAL CHEMIST.

George Sherman Alcorn,
 John Lansing Banister,
 Gordon Acers Bowdish,
 Andrew John Buckham,
 Edward W. Clark,
 William Douglas Condon,
 John Robert Conrads,
 George Beal Daniels,
 Jephtha Wade Doty,
 Wirt Payson Doty,
 Harvey Kimble Eaton,

George Henry Felt, Jr.,
 Charles Thomas Haigh,
 Paul Henry Hirth,
 Gerhard Meinert,
 Thomas Wilson Miller,
 Edsel Alexander Ruddiman,
 Elmer Gardner Runyan,
 Otto Scherer,
 Edgar Dennis Smith,
 Edwin Rawson Stivers,
 Mason Sacia Thomson,

Fred Fenner Vedder.

DOCTOR OF MEDICINE.

[HOMCEOPATHIC MEDICAL COLLEGE.]

Lawrence Baldwin,
 George Gabriel Caron,
 Annie Elizabeth Clark,
 Laura Amanda Edwards,
 Joseph Johnson Fowler,
 George Wirt Hathaway,
 Mary Tufts Hathaway,
 George Benson Kelso,

Roscoe Dudley Mack,
 John Wesley McLachlan,
 Isaiah Snyder Morris,
 Edward Herman Pond,
 Hugh B. Reynolds,
 Nana Braden Riddell,
 Robert Coleman Rudy,
 Elizabeth Uncapher,

Harold Beckwith Wilson.

DOCTOR OF DENTAL SURGERY.

Henry Leo Banzhaf,	Merritt Custar Hutchins,
Charles George Bush,	Michael Willis Lau,
Edmund Keyes Clements,	Edwin Emery Lobb,
William Albert Courtney,	Caroline Ada Magness,
Herbert Cox,	Thomas John Mason,
Harry Williamson Davis,	Arthur Henry McCann,
Henry Addison Dawley,	Matilda Nehls,
George James Dennis,	Charles Sillman Page,
Frank Fringer Douds,	Albert Rysdorp,
Calvin Ezra Fitzgerald,	Clifford Francis Snyder,
Felipe Gallègos,	Frederick Mott Thompson,
Charles Perry Hanson,	Marie A. Thompson,
Anastasia Helen Hefter,	Walton Kellogg Walrath,
William A. Hoover,	George Henry Watson,
Ralph Hoyt,	Benjamin Franklin Yates.

HONORARY DEGREES.

MASTER OF ARTS.

Masakazu Toyama,

Tokio, Japan.

DOCTOR OF PHILOSOPHY.

Albert B. Prescott, M. D.,

University of Michigan.

DOCTOR OF LAWS.

Sir Robert Hart,

Peking, China.

Hon. Cushman Kellogg Davis, A. B.,

St. Paul, Minn.

THE
Faculties and Students of the University

FOR THE YEAR 1886-7.

DEPARTMENT
OF
Literature, Science, and the Arts.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

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CHARLES E. GREENE, A. M., C. E.,

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EDWARD L. WALTER, PH. D.,

ALEXANDER WINCHELL, LL. D.,

WILLIAM H. PAYNE, A. M.,

ISAAC N. DEMMON, A. M.,

*Deceased.

GEORGE S. MORRIS, PH. D.,
ELISHA JONES, A. M.,
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HENRY SEWALL, PH. D.,
WOOSTER W. BEMAN, A. M.,
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THOMAS M. COOLEY, LL. D.,
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VOLNEY M. SPALDING, A. B.,
BYRON W. CHEEVER, A. M., M. D.,
CALVIN B. CADY,
JOSEPH B. DAVIS, C. E.,
CHARLES N. JONES, A. B.,
RICHARD HUDSON, A. M.,
OTIS C. JOHNSON, A. M.,
BENJAMIN C. BURT, A. M.,
CALVIN THOMAS, A. M.,
HENRY C. ADAMS, PH. D.,
JOHN DEWEY, PH. D.,
WILLIAM P. WELLS, A. M.,
P. R. DE PONT, A. B., B. S.,

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ALFRED HENNEQUIN, PH. D.,
CHARLES M. GAYLEY, A. B.,
JOHN M. SCHAEBERLE, C. E.,
LOUISA REED STOWELL, M. S.,
ARTHUR W. BURNETT, A. M.,
WALTER MILLER, A. M.,
JACOB E. REIGHARD, PH. B.,
ANDREW C. McLAUGHLIN, A. B.

STUDENTS.*

RESIDENT GRADUATES.

NAME.		RESIDENCE.
Shigehide Arakawa, B. Agr., Sapporo Agricultural College.	U. (5)	<i>Sapporo, Japan.</i>
Webster Cook, A. M.,	U. (6)	<i>Ann Arbor.</i>
Fred Calvin Davis, B. S., Michigan Agricultural College.		<i>Lansing.</i>
Robert Neil Dickman, A. B.,		<i>Cleveland, O.</i>
Charles Dolan, A. B., Madison University.	U. (5)	<i>Ann Arbor.</i>
John Foster Eastwood, A. M.,	U. (7)	<i>Ann Arbor.</i>
Ludovic Estes, A. M.,	U. (8)	<i>Spiceland, Ind.</i>
Estella Lois Guppy, A. B., University of the Pacific.	U. (1)	<i>San José, Cal.</i>
Julius Cæsar Hainer, B. S., Iowa Agricultural College.		<i>Ames, Ia.</i>
Fred Jenner Hodges, B. S., Michigan Agricultural College.		<i>Grand Rapids.</i>
James Allen Lewis, B. S., Kansas Agricultural College.		<i>Auburn, Kan.</i>
Ross LeHunte Mahon, Ph. B.,		<i>Ann Arbor.</i>
Sedgwick Mather, A. B., Madison University.	U. (1)	<i>Belleville, N. Y.</i>
John W. Matthews, B. S., Michigan Agricultural College.		<i>Hastings.</i>
William John McMurtry, A. M.,	U. (1)	<i>Wayne.</i>
Louis Delevan Niles, B. S., M. D., Michigan Agricultural College.	U. (7)	<i>Ann Arbor.</i>
Frederick George Novy, B. S., (Chem.),	U. (7)	<i>Ann Arbor.</i>

* NOTE.—The following is the explanation of the letters and figures set against the students' names:

The letters in the column under the heading *DEGREE* show for what degree the students working on the credit system are candidates; but when found opposite the names of persons pursuing the university system they indicate rather the direction in which such students are working than the degree which they may ultimately take. The figures under the heading *COURSES* show the number of Full Courses taken prior to the beginning of the current academic year 1886-7, and completed without conditions. By a Full Course is meant the equivalent of five exercises a week during a semester. The abbreviation U. means university system. See p. 70. The figures from 1 to 10 in parenthesis indicate the group in which the chief studies of the person are found, as follows: (1) Ancient Languages and Literatures, (2) Mathematics, (3) Modern Languages and Literatures, (4) English Literature and Rhetoric, (5) History and Political Science, (6) Philosophy and the Fine Arts, (7) Physical Sciences, (8) Astronomy, (9) Geology, Zoology, and Botany, (10) Engineering.

NAME.		RESIDENCE.
Richard Plueddemann, A. B., German Wallace College.		<i>Ann Arbor.</i>
Charles Buchanan Scott, A. B., Rutgers College.	U. (9)	<i>Holland.</i>
Hannah Robie Sewall, A. B., University of Minnesota.	U. (5)	<i>St. Paul, Minn.</i>
Anna Mary Stackhouse, B. S., Pennsylvania State College.	U. (2)	<i>Hamorton, Pa.</i>
Margaret Stewart, A. B.,	U. (7)	<i>Wyandotte.</i>
Edwin Pritchard Trueblood, B. S., Earlham College.		<i>Bloomington, Ind.</i>
Stephen Francis Weston, A. B., Antioch College.	U. (6)	<i>Two Rivers, Wis.</i>

GRADUATES STUDYING FOR MASTER'S DEGREE IN ABSENTIA.

NAME.		RESIDENCE.
Lucy Caroline Andrews, A. B.,		<i>Wellesley, Mass.</i>
Albert Llewellyn Arey, C. E.,		<i>Rochester, N. Y.</i>
Florus Alonzo Barbour, A. B.,		<i>Ypsilanti.</i>
Hugh Brown, A. B.,		<i>Pontiac.</i>
Mary Emma Byrd, A. B.,		<i>Northfield, Minn.</i>
Mary Sophia Case, A. B.,		<i>Wellesley, Mass.</i>
Carlos Bingham Cochrane, A. B.,		<i>West Chester, Pa.</i>
Grace Darling, Ph. B.,		<i>Oshkosh, Wis.</i>
Joseph Horace Drake, A. B.,		<i>Battle Creek.</i>
Myron Oscar Graves, A. B.,		<i>Wyandotte.</i>
Abby Little Hitchcock, Ph. B.,		<i>Muskegon.</i>
George Francis James, A. B.,		<i>Ann Arbor.</i>
William Andrew McAndrew, A. B.,		<i>St. Clair.</i>
Mary Burnham Putnam, Ph. B.,		<i>Mankato, Minn.</i>
Grant Byron Swisher, A. B.,		<i>Oil City, Pa.</i>
Frank Day Wells, A. B.,		<i>Rochester.</i>
Harold Beckwith Wilson, B. S.,		<i>Ann Arbor.</i>

CANDIDATES FOR A DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Fred Hull Abbott,	A. B.	6	<i>Hudson.</i>
Anna Howard Adams,	Ph. B.		<i>Ann Arbor.</i>
Ephraim Douglass Adams,	A. B.	U. (5)	<i>Eldora, Ia.</i>
William Grant Adams,	A. B.	11	<i>Ann Arbor.</i>
Charles Towne Alexander,	B. L.		<i>Grosse Isle.</i>
Charles Edwin Albright,	B. L.		<i>Ann Arbor.</i>
Della Allen,	B. L.		<i>Britton.</i>

DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Frank Anderson,	B. S. (C. E.)		<i>Salt Lake City, Utah.</i>
Genevra Mabel Anderson,	A. B.		<i>Ann Arbor.</i>
Rosetta Anderson,	A. B.		<i>Ann Arbor.</i>
Isabella Montgomery Andrews,	A. B.	6 3-5	<i>Canandaigua, N. Y.</i>
James Rowland Angell,	A. B.		<i>Ann Arbor.</i>
Will Rogers Antisdell,	B. L.		<i>Detroit.</i>
Frank Sheldon Arnett,	B. L.	2 4-5	<i>Columbus, O.</i>
Franc Arnold,	Ph. B.		<i>Allegan.</i>
Mary Emma Ashley,	A. B.	13 2-5	<i>Ann Arbor.</i>
Edith Emma Atkins,	A. B.		<i>Ann Arbor.</i>
Wirt McGregor Austin,	Ph. B.	20 3-5	<i>Lapeer.</i>
Glenn Mark Averill,	B. S.		<i>Cedar Rapids.</i>
Carrie Ayers,	B. L.	10 2-5	<i>Fort Smith, Ark.</i>
Ida Ayers,	B. L.	11 2-5	<i>Fort Smith, Ark.</i>
Robert Simeon Babcock,	B. S. (C. E.)	5 4-5	<i>Manistee.</i>
Edmond Marvin Bailey,	B. L.		<i>Hastings.</i>
Frank Seymour Bailie,	B. S. (C. E.)	1 3-5	<i>Ann Arbor.</i>
Francis Joseph Baker,	B. S. (Mch. E.)	19	<i>Chicago, Ill.</i>
James Madison Baker,	B. L.		<i>Freeport.</i>
Verdie Jane Baker,	B. L.		<i>Freeport.</i>
Walter John Baldwin,	B. S. (C. E.)		<i>Romansville, Pa.</i>
James Everett Ball,	A. B.	17 2-5	<i>Marquette.</i>
William Dearborn Ball,	B. S. (Mech. E.)		<i>Ann Arbor.</i>
Thomas Jack Ballinger.	Ph. B.	19 4-5	<i>Galveston, Tex.</i>
Arthur Hurd Bannon,	Ph. B.		<i>Portsmouth, O.</i>
Henry Towne Bannon,	Ph. B.		<i>Portsmouth, O.</i>
Grant S. Barbet,	B. S.		<i>Midland.</i>
Fannie Barker,	Ph. B.		<i>Davenport, Ia.</i>
Katherine Eloise Barnes,	B. S.	21	<i>Rochester.</i>
Blanche Kingsbury Barney,	B. L.	9 3-5	<i>Ann Arbor.</i>
Laverne Bassett,	Ph. B.	12 2-5	<i>Saline.</i>
Harry Moore Bates,	Ph. B.		<i>Chicago, Ill.</i>
Willis John Beckley,	Ph. B.	6 1-5	<i>Ravenna, O.</i>
Charles Potwin Beckwith,	B. S.	19 2-5	<i>Ann Arbor.</i>
Frank Euclid Beeman,	A. B.	20	<i>Ann Arbor.</i>
Emma E. Beers,	Ph. B.	21 2-5	<i>Chicago, Ill.</i>
Louis Begemann,	B. S.		<i>Evansville, Ind.</i>
Jennie Louise Bement,	B. L.		<i>Maple Rapids.</i>
Levi L. Benbow,	A. B.	16 1-5	<i>Ann Arbor.</i>
Arthur Lincoln Benedict,	A. B.	20 4-5	<i>Buffalo, N. Y.</i>
Dora Bennett,	Ph. B.	5 4-5	<i>Franklin, O.</i>
Flora Bennett,	Ph. B.	5 4-5	<i>Franklin, O.</i>
Andrew Reunick Benson,	B. S. (C. E.)		<i>Clinton, Ia.</i>
Eugene Nimmons Best,	A. B.	4 1-5	<i>Minneapolis, Minn.</i>
Clarissa Sophia Bigelow,	Ph. B.	6 2-5	<i>Galva, Ill.</i>

STUDENTS.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Addie Deett Bird,	B. S.	15 20	Ann Arbor.
Horace Van Birdsell,	B. L.	3 4-5	South Bend, Ind.
Elma Mary Blackman,	B. L.	18 4-5	Kalamazoo.
John Noble Blair,	A. B.	11	Brooklyn, N. Y.
William Augustus Blakeley.	B. L.	10 2-5	Pittsburgh, Pa.
Thaddeus Lincoln Bolton,	A. B.		Ann Arbor.
Benjamin Parsons Bourland,	A. B.	17 4 4-5	Peoria, Ill.
Frank Swift Bourns,	B. S.	5 1-5	Ann Arbor.
Benjamin Butler Bowen,	B. S. (C. E.)	17	Topeka, Kan.
Edward Boyle,	A. B.	12 4-5	Leslie.
Hollie Broughton Bracewell,	Ph. B.	5 3-5	Corydon, Ia.
Adelaide May Bradford,	A. B.	18 1-5	Grand Rapids.
Edgar Ewing Brandon,	A. B.		Sedalia, Mo.
George Russel Brandon,	B. S. (Mech. E.)		Detroit.
Gertrude Tamora Breed,	A. B.	13 1-5	Ann Arbor.
Mary Blanche Briggs,	Ph. B.		Battle Creek.
Carrie Ellen Britten,	Ph. B.	11 1-5	Ann Arbor.
Andy McCormack Brown,	Ph. B.		Jamestown, O.
Antoinette Brown,	B. L.	16 4-5	Chicago, Ill.
Charles A. Brown,	B. L.	1 2-5	Waynesville, O.
Dugald Brown,	A. B.		Ann Arbor.
George Arthur Brown,	B. S.	13	Saline.
Henry Herbert Brown,	A. B.	11 1-5	Geneseo, Ill.
Robert Corwin Bryant,	A. B.	18 3-5	Urbana, O.
Justin Briggs Bullis,	B. S. (C. E.)	4 2-5	Ann Arbor.
Frank Forrest Bumps,	Ph. B.	17 1-5	Shelby.
Clara Josephine Burke,	B. L.		Niles.
Sarah Julia Burke,	B. L.	2 3-5	Bloomington, Ill.
Arthur William Burleigh,	Ph. B.		Laverne, Minn.
Joseph Beatty Burt,	A. B.	12	Jeffersonville, Ind.
Harvey Safford Bush,	A. B.	16 2-5	Port Huron.
Ok Button,	B. S.		Ann Arbor.
Elizabeth Hendricks Buzzell,	B. L.	8 2-5	Rushville, N. Y.
Clarence Byrnes,	A. B.	21	Ann Arbor.
Mary Victoria Cady,	A. B.	1 3-5	Ypsilanti.
Lewellyn Link Callaway,	A. B.		Virginia City, Mon.
Anna Louise Campbell,	Ph. B.	17 1-5	Ypsilanti.
Clarence Galen Campbell,	Ph. B.	13 4-5	West Lebanon, Ind.
Walter Webster Campbell,	B. S.	17 2-5	Ann Arbor.
George Lewis Canfield,	Ph. B.	16 2-5	Detroit.
Joseph Eugene Carpenter, Jr.,	B. S. (M. E.)	8 3-5	Clinton, Ia.
Will Bagley Carpenter,	B. S. (C. E.)		Detroit.
George Peter Cary,	Ph. B.	20 1-5	Milwaukee, Wis.
Mattie Anna Catton,	Ph. B.		Perry, N. Y.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Martin Cavanaugh,	A. B. 30	20 3-5	<i>Manchester.</i>
Andrew Burns Chalmers,	A. B.		<i>Rockford.</i>
William Wallace Chalmers,	A. B.	15 4-5	<i>Rockford.</i>
Celia Esther Chamberlain,	Ph. B.	19 3-5	<i>Perry, N. Y.</i>
Louella Chapin,	Ph. B.	9 1-5	<i>Chicago, Ill.</i>
Mary Louise Childs,	B. L.	5 2-5	<i>Ann Arbor.</i>
David Smith Christopher,	B. S. (M. E.) 11		<i>Chicago, Ill.</i>
Edgar Damon Church,	B. S. (Mech. E.)		<i>East Saginaw.</i>
Elizabeth Rebecca Clark,	A. B.	12	<i>Lakeville, N. Y.</i>
Fred Converse Clark,	A. B.	17 2-5	<i>Earlville, Ill.</i>
Minnie Olive Florence Clark,	A. B.	17 1-5	<i>Grand Rapids.</i>
Stanton Walter Clark,	B. L.		<i>Mayville.</i>
Frederick Marshall Clarke,	B. S. (Mech. E.)		<i>Dubuque, Ia.</i>
Fred Bagley Close,	B. S. (M. E.)		<i>Detroit.</i>
David Kipling Cochrane,	Ph. B.	20 2-5	<i>Manistee.</i>
Solomon Cohen,	Ph. B.		<i>Detroit.</i>
Hugh Morton Coldren,	Ph. B.		<i>Hillsdale.</i>
Rossetter Gleason Cole,	Ph. B.	11 3-5	<i>Ann Arbor.</i>
Edwin Truman Coman,	B. L.		<i>Kankakee, Ill.</i>
Louis Kossuth Comstock,	Ph. B.	12 4-5	<i>Ann Arbor.</i>
Elbert Ellsworth Cone,	B. L.		<i>Ann Arbor.</i>
Leonidas Connell,	B. L.	19 1-5	<i>Ann Arbor.</i>
Ernest Ben Conrad,	B. S. (Mech. E.)		<i>Ann Arbor.</i>
Frank Elmer Converse,	B. L. U. (5)		<i>Owosso.</i>
Isabella Cook,	A. B.	17 2-5	<i>Saginaw.</i>
William Randolph Cook,	B. L.		<i>Hastings.</i>
Willis Gurdon Cook,	B. S.		<i>Grand Blanc.</i>
Charles Horton Cooley,	A. B.	19 2-5	<i>Ann Arbor.</i>
Edwin Marion Coolidge,	B. S.		<i>Winnebago, Ill.</i>
Lura Cleveland Corbett,	B. L.		<i>Jonesville.</i>
Arthur John Covell,	A. B.	20 1-5	<i>Napoleon.</i>
Seward Cramer,	B. S. (C. E.)	20 4-5	<i>Ann Arbor.</i>
Frederic Walter Crane,	B. S. (Mech. E.)		<i>Ann Arbor.</i>
Wilmarth Crispin,	A. B.		<i>Ionia.</i>
Loretta Crissman,	Ph. B.		<i>Washington.</i>
Flavius Morse Crocker,	B. S. (C. E.) 7		<i>Ann Arbor.</i>
Herbert Samuel Crocker,	B. S. (C. E.) 7		<i>Ann Arbor.</i>
Franc Nabby Crosby,	Ph. B.	4 4-5	<i>Savona, N. Y.</i>
Hattie Carrie Crosby,	Ph. B.	4 4-5	<i>Savona, N. Y.</i>
Anson Bartie Curtis,	A. B.	18 1-5	<i>Rives Junction.</i>
Alice Harper Damon,	A. B.	2 2-5	<i>Westvale, Mass.</i>
Julius Clarke Daniels,	B. S. (C. E.)		<i>Egin, Ill.</i>
Donnell Davenport,	B. L.		<i>Helena, Mon.</i>
Theron Lansing Davies,	A. B.	11 3-5	<i>Letart Falls, W. Va.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Lizzie Hadley Davis,	B. L.		Holly.
George Ellsworth Dawson,	A. B.	16 3-5	Lexington, Ill.
Rachel Ella Dawson,	Ph. B.	13	Pontiac.
Robert Henry Day,	Ph. B.	2 2-5	Ravenna, O.
William Harrison Day, Jr.,	B. S.	3	Dubuque, Ia.
Bettie A. Dayton,	B. L.		Lansing.
Cora Annenia Deake,	A. B.		South Lyon.
Herbert Fletcher DeCou,	A. B.	8 4-5	Detroit.
George Winthrop DeHaven,	B. S. (C. E.)		Chicago, Ill.
John Norman Derby,	B. S. (Mech. E.)		Flint.
Ellsworth Thomas Derr,	A. B.		Moreland, Pa.
William Herman Detwyler,	Ph. B.	6 2-5	Jackson.
Mary Cynthia Dickerson.	B. L.	3	Grand Rapids.
Charles Young Dixon,	B. S. (C. E.)	21 2-5	Niles.
Dudley Hersey Doe,	B. S. (C. E.)		Stillwater, Minn.
Louis Roscoe Doud,	B. S.	2 3-5	Winona, Minn.
Edgar Millard Doughty,	A. B.		Matteawan, N. Y.
Henry Woolsey Douglas,	B. S. (Mech. E.)	7	Ann Arbor.
James Eugene Duffy,	B. S.	1 3-5	Ann Arbor.
John Leander Duffy,	A. B.	13 1-5	Ann Arbor.
Grant Henry Dunning,	B. S. (C. E.)		Pettyville.
William Worth Eagan,	B. S.	6 3-5	Clinton.
Charles Kirke Eddy,	Ph. B.	6 1-5	East Saginaw.
Edwin Hart Ehrman,	B. S. (Mech. E.)	13 1-5	Ann Arbor.
Solomon Eisenstaedt,	B. S.	12 2-5	Chicago, Ill.
Charles Edward Everett,	B. L.	6 1-5	Lansing.
George Edward Fairbairn,	Ph. B.	20 1-5	Detroit.
Harold Wellman Fairbanks,	B. S.	6 2-5	San Diego, Cal.
Royal Twombly Farrand,	A. B.		Detroit.
Charles Adam Fisher,	Ph. B.		Pontiac.
Harry Lincoln Forbes,	A. B.	2 2-5	Danvers, Ill.
Francis Chipman Ford,	A. B.	14	Detroit.
Oliver George Frederick,	B. S.	10 2-5	South Toledo, O.
Henry Briggs Freeman,	B. L.		Ann Arbor.
Herbert Martin Frost,	A. B.		Ann Arbor.
David Byron Gahn,	A. B.	6 2-5	Belleville, O.
Thomas Hart Gale,	B. L.	12 2-5	Chicago, Ill.
Lotta Rose Gallagher,	B. L.	11 3-5	Manistee.
George Telford Gamble,	B. L.	7 3-5	East Saginaw.
Ellen Elizabeth Garrigues,	A. B.	5 1-5	Ann Arbor.
Charles Byron Garrison,	A. B.		Vernon.
Elizabeth Sargent Gastman,	A. B.	15 4-5	Decatur, Ill.
Winthrop Enoch Gastman,	B. S. (M. E.)		Decatur, Ill.
Edwin Francis Gay,	A. B.	1 3-5	Ann Arbor.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Albert Eugene Gebhardt.	A. B.		Ann Arbor.
Caroline Louise Gelston.	A. B.	12 1-5	Ann Arbor.
Ruth Gentry.	Ph. B.	10 1-5	Stilesville, Ind.
Alice Mary Gidday.	B. L.		Detroit.
Charles Edwin Goddard.	B. S.	5 4-5	Winnebago, Ill. [sic.
Moses Gomberg.	B. S.		Elisabethgrad, Rus-
Katy Helen Gower.	A. B.	11 2-5	New Haven, Conn.
William Amasa Grace.	A. B.	9 4-5	Ann Arbor.
Paul Robert Gray.	A. B.		Detroit.
Bernard Lincoln Green.	B. S. (C. E.)		Washington, D. C.
Charles Alexander Green.	Ph. B.	7 1-5	Saginaw.
John Greenshields.	A. B.	5 2-5	Romeo.
John Hubert Greusel.	B. L.	13 1-5	Detroit.
Lizzie Caroline Griffin.	B. L.		Bellefontaine, O.
William Wickware Griffin.	A. B.		Detroit.
Charles Edwards Grove.	A. B.	19	New Britain, Pa.
Edwin William Groves.	B. S. (C. E.)	11	Ann Arbor.
Malcolm Gunn.	Ph. B.	1-5	Chicago, Ill.
Maria Ruth Guppy.	B. L.	20 4-5	San José, Cal.
Harry Killmaster Gustin.	B. S. (C. E.)	4 3-5	Bay City.
Carrie Haigh.	A. B.	15 4-5	Chicago, Ill.
Nellie Bartlett Haire.	A. B.	16 3-5	Chicago, Ill.
Arthur Graham Hall.	B. S.	20	Detroit.
Joseph Halsted.	B. S. (Mch. E.)	20 1-5	Chicago, Ill.
Walter Jones Hamilton.	Ph. B.	10 4-5	Cleveland, O.
William Roy Hand.	B. S. (C. E.)	19 3-5	Janesville, Ia.
William Warren Harless.	B. S. (C. E.)		Chicago, Ill.
Julian Dana Harmon.	A. B.	7 1-5	Warren, O.
Grace Ella Harrah.	B. L.		Detroit.
William Welton Harris.	Ph. B.	8 1-5	Jackson.
Luther Samuel Harvey.	A. B.	9 3-5	Detroit.
Charles Harrison Hatch.	B. S.	12 2-5	Bay City.
William Henry Hawkes.	A. B.	19 1-5	Plainwell.
Frank Winchester Hawks.	Ph. B.	8 2-5	Goshen, Ind.
Willis Boyd Hayes.	B. S. (C. E.)		Detroit.
Walter Edward Healy.	A. B.		Dundee, Ill.
Arthur Strong Hebard.	A. B.	4 4-5	Pequaming.
William Carey Hebard.	A. B.	3 2-5	Pequaming.
Julius Hegeler.	P. S. (C. F.)	8 2-5	LaSalle, Ill.
David Emil Heineman.	Ph. B.	17 4-5	Detroit.
Frank Oscar Hellier.	B. L.		Grass Lake.
Faith Helmer.	Ph. B.		Ann Arbor.
David Bill Hempstead.	A. B.		Salt Lake City, Uta.
Percy Benjamin Herr.	Ph. B.		Chicago, Ill.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Belva Mary Herron,	Ph. B.		<i>Mexico, Mo.</i>
Kendal Woodward Hess,	B. S. (Mech. E.)	18	<i>Grand Rapids.</i>
George Matthews Hewey,	B. L.	19 3-5	<i>Ann Arbor.</i>
John Denison Hibbard,	B. S. (Mech. E.)	20 1-5	<i>Hyde Park, Ill.</i>
Preston Manasseh Hickey,	A. B. & U.	(1)	<i>Detroit.</i>
Hermann Charles Wm. Hildner,	A. B.	15	<i>Detroit.</i>
Jonathan Augustus C. Hildner,	A. B.	1 3-5	<i>Detroit.</i>
George B. Hodge,	B. S. (C. E.)	21 2-5	<i>Beech.</i>
John Eugene Hodge,	B. S. (C. E.)	14 2-5	<i>Beech.</i>
Joseph H. Hodgson,	B. S. (C. E.)		<i>Houghton.</i>
Walter Simpson Holden,	A. B.	6 2-5	<i>Chicago, Ill.</i>
Lydia Day Holmes,	Ph. B.	1 3-5	<i>Bay City.</i>
Anderson Hoyt Hopkins,	B. L.	6	<i>Ockley, Ind.</i>
Alice Minerva Hosmer,	A. B.	11 3-5	<i>Chicago, Ill.</i>
Francis George Howard,	B. S. (C. E.)	7 3-5	<i>Clinton, Ia.</i>
Phebe Anne Isadore Howell,	A. B.		<i>Ionia.</i>
John T. Noye Hoyt,	A. B.		<i>Grand Rapids.</i>
Elmer Ellsworth Hubbard,	A. B. & U.	(7)	<i>Hinckley, Ill.</i>
Walter Quintus Hubbard,	A. B.		<i>Hartford, Ky.</i>
William Frank Hubbard,	A. B.		<i>Monroe.</i>
Henry Hudson,	Ph. B.	6 2-5	<i>Hinsdale, Ill.</i>
Millicent Hunt,	Ph. B.		<i>Alpena.</i>
Arthur Mekeel Hussey,	A. B.	10 2-5	<i>North Berwick, Me.</i>
William Alfred Hutzell,	B. S. (Chem.)	13 2-5	<i>Ann Arbor.</i>
George Preston Hyde,	Ph. B.	4 4-5	<i>Joliet, Ill.</i>
Satia Jewett Hyde,	A. B.	19 2-5	<i>Ann Arbor.</i>
Richard Greene Inwood,	B. L.	12 3-5	<i>South Bend, Ind.</i>
John McIntyre Jaycox,	B. S. (M. E.)	18 2-5	<i>Ann Arbor.</i>
Trafford Newton Jayne,	A. B.		<i>Winona, Minn.</i>
Violet Delille Jayne,	A. B.	16 4-5	<i>Winona, Minn.</i>
Harry Jenkins,	B. S. (Chem.)	3-5	<i>Ann Arbor.</i>
Stillman George Jenks,	B. L.	6 2-5	<i>Ionia.</i>
Louis Parker Jocelyn,	B. S.	20 3-5	<i>Ann Arbor.</i>
Kate Lincoln Johnson,	B. L.	7 1-5	<i>Ann Arbor.</i>
Nellie Minerva Johnson,	B. L.	6	<i>Vassar.</i>
Anna Susan Jones,	A. B.	9 4-5	<i>Grand Rapids.</i>
Elsie Jones,	A. B.	10 3-5	<i>Ann Arbor.</i>
Frederica Florence Jones,	A. B.	18	<i>Ann Arbor.</i>
Ralph Jones,	Ph. B.	16	<i>Brandon, Wis.</i>
Bertha Joslyn,	B. L.	6 1-5	<i>Port Huron.</i>
John Reuben Kempf,	B. S. (Mech. E.)		<i>Ann Arbor.</i>
George Marshall Kendall,	B. L.		<i>Ann Arbor.</i>
Dora Ella Kennedy,	B. L.	20 2-5	<i>Hastings.</i>
Harry James Kennedy,	A. B.		<i>Ionia.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Richard Khuen, Jr,	B. S. (C. E.)	13 1-5	<i>Saginaw.</i>
Guy Lincoln Kiefer,	A. B.	16 3-5	<i>Detroit.</i>
Charles Theron King,	B. L.		<i>Ann Arbor.</i>
Florence Bingham Kinne,	A. B.	17	<i>Ypsilanti.</i>
Genevieve Kinne,	A. B.	6 1-5	<i>Ypsilanti.</i>
Clesson Selwyne Kinney.	A. B.	19	<i>Norwalk, O.</i>
Emory Davis Kirby,	A. B.	8 3-5	<i>Battle Creek.</i>
James Ellsworth Kirtland,	B. L.		<i>Howell.</i>
Alexander C. Kiskadden,	B. L.	U. (5)	<i>Tiffin, O.</i>
Harry Haynes Koons.	B. S. (Mech. E.)		<i>Shickshinny, Pa.</i>
Pomeroy Ladue,	B. S. (Mech. E.)		<i>Detroit.</i>
Ray Dee Lampson,	Ph. B.	13	<i>Windsor, O.</i>
Alice Maud Lapham,	A. B.	6 4-5	<i>Chicago, Ill.</i>
Harry Gooding Lapham,	B. S.	7 5	<i>Chicago, Ill.</i>
Lewellyn Carey Lawrence,	A. B.	17 1-5	<i>Ann Arbor.</i>
Franklin Frees Lehman,	A. B.	14	<i>Madisonburg, O.</i>
Frances Charlotte Lennox,	Ph. B.	6 1-5	<i>East Saginaw.</i>
John Buck Leonard,	B. S. (C. E.)	3 2-5	<i>Union City.</i>
Francis Alexander Leslie,	B. L.	6 2-5	<i>Ockley, Ind.</i>
Moritz Levi,	A. B.	18 2-5	<i>Ann Arbor.</i>
William Allan Livingstone,	B. L.	11 4-5	<i>Detroit.</i>
Ira Milton Long,	Ph. B.	4 2-5	<i>Niles.</i>
Fred Sibley Loomis,	A. B.	5 2-5	<i>Chicago, Ill.</i>
George Loughnane,	B. S. (C. E.)	19 1-5	<i>Lapeer.</i>
Helen Louisa Lovell,	A. B.	U. (1)	<i>Flint.</i>
Frederick Homan Loveridge,	B. S. (Mech. E.)	6 3-5	<i>Coldwater.</i>
William Watson Lovett,	B. L.		<i>Detroit.</i>
Lucian Hezekiah Emmett Lowry,	A. B.	11 2-5	<i>Lowellville, O.</i>
Florence May Lyon.	B. S. (Biol.)	6 1-5	<i>Detroit.</i>
Emma Mack,	B. L.		<i>Niles.</i>
Clark Ross Mahan,	Ph. B.	1	<i>Abilene, Kan.</i>
Grant Mahan,	Ph. B.	2 1 5	<i>Mt. Morris, Ill.</i>
Elmer Ellsworth Mains,	B. S.		<i>Dexter.</i>
William Charles Malley,	B. L.		<i>Chicago, Ill.</i>
Morgan McMorries Mann,	Ph. B.	12 3-5	<i>Ann Arbor.</i>
Walter Lee Mann,	Ph. B.		<i>Ann Arbor.</i>
Rollo Glenroy Manning,	B. S. (C. E.)		<i>Elkhart, Ind.</i>
Allen Birch Martin,	B. S.	13	<i>Bement, Ill.</i>
William Kilpatrick Maxwell,	A. B.		<i>Cincinnati, O.</i>
Edmund Schuyler Colfax May,	B. S. (M. E.)		<i>Newark, N. J.</i>
Eugene Loring McAllaster,	B. S. (Mech. E.)	14	<i>Ann Arbor.</i>
Joe Lynn McAllister,	B. S.		<i>Sinclairville, N. Y.</i>
William Stuart McArthur,	B. S.		<i>Cheboygan.</i>
James Nathan McBride,	B. L.	U. (5)	<i>Burton.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Ina McBurney,	B. S.		<i>Flint.</i>
Arthur McCain,	Ph. B.	6	<i>Jackson.</i>
John Edwin McCartney,	A. B.		<i>Dansville, N. Y.</i>
Irving George McColl,	B. L.		<i>Delhi Mills.</i>
Maria McDonald,	B. L.	18 3-5	<i>Rochester.</i>
Frank Daniel McDonell,	B. S.	12	<i>Bay City.</i>
Michael Edward McEnany,	Ph. B.	17 4-5	<i>Ann Arbor.</i>
George John McGill,	A. B.		<i>Ypsilanti.</i>
George Edward McIlwain,	A. B.		<i>Wayne.</i>
Charles Luther McIntire,	B. S. (Mch. E.)	11	<i>Ypsilanti.</i>
Robert Douglas McLeod,	A. B.	8 3-5	<i>Colorado Springs, Col.</i>
Lawrence Amos McLouth,	A. B.	16	<i>Ann Arbor.</i>
Arthur McNeal,	A. B.		<i>Allerdice, Mon.</i>
Fred William Mehlhop,	B. L.	11 4-5	<i>Dubuque, Ia.</i>
Frank Thomson Merry,	B. L.	4-5	<i>Ann Arbor.</i>
Martha Prentice Merwin,	A. B.	U. (1)	<i>Ann Arbor.</i>
Julian Millard,	A. B.	6 3-5	<i>St. Paul, Minn.</i>
Charles Tyler Miller,	Ph. B.	11 4-5	<i>Detroit.</i>
Edwin Lillie Miller,	A. B.		<i>Detroit.</i>
Owen Lambe Miller,	A. B.		<i>Plymouth.</i>
Loren Douglas Milliman,	A. B.		<i>Lakeville, N. Y.</i>
Myron Williams Mills,	B. L.	20 3-5	<i>Marysville.</i>
Susie Suvina Mishler,	A. B.	15 3-5	<i>Yellow Creek, Ill.</i>
George Ralph Mitchell,	A. B.	12	<i>Hyde Park, Ill.</i>
Stafford Thomas Mitchell,	B. L.	19 4-5	<i>Constantine.</i>
Charles Manley Moffet,	B. L.	5	<i>Jackson.</i>
John Edward Moore,	B. S.		<i>Ann Arbor.</i>
Robert Webber Moore,	Ph. B.	21 3 5	<i>Delphi, Ind.</i>
Thomas Frank Moran,	A. B.	20 2-5	<i>Manchester.</i>
William Mead Morrow,	B. S. (C. E.)		<i>Niles.</i>
Benjamin Carl Morse,	B. S.	4	<i>Ann Arbor.</i>
John Cranch Moses, B. S., Urbana College.	B. S. (C. E.)	6 4-5	<i>Urbana, O.</i>
William Vaughan Moses,	B. S. (C. E.)	9	<i>Urbana, O.</i>
Arthur Douglas Mott,	B. S. (C. E.)	1 3-5	<i>Battle Creek.</i>
William Howie Muir,	B. S. (Mch. E.)	11 3-5	<i>Detroit.</i>
Fanny Talcott Mulliken,	Ph. B.	12 2-5	<i>Detroit.</i>
Lewis Murbach,	Ph. B.	6 3-5	<i>Riga.</i>
Clyde Vallandigham Nafe,	A. B.	6 2-5	<i>Rochester, Ind.</i>
Frank Wesley Nagler,	B. L.	4-5	<i>Hastings.</i>
Elmer Hartson Neff,	B. S. (Mch. E.)	3 1-5	<i>Flint.</i>
Minnie Howe Newby,	Ph. B.	5	<i>Chicago, Ill.</i>
Alphonso Gerald Newcomer,	A. B.	U. (1)	<i>Mt. Morris, Ill.</i>
Julia Bernecia Newton,	Ph. B.		<i>Pontiac.</i>

174 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Burton Daniel Nichols,	A. B.	16 3-5	Elgin, Ill.
Lizzie Herson Northup,	B. L.	11 1-5	Port Huron.
Claire Avery Orr,	A. B.	17	Kankakee, Ill.
William Loyd Page,	A. B.		Ann Arbor.
Carrie Louise Paine,	B. L.	10 4-5	Detroit.
Carrie Marion Palmer,	B. L.	4 4-5	Ann Arbor.
William Wetzler Parfet,	A. B.	6 2-5	Golden, Col.
Robert Ezra Park,	Ph. B.	19 2-5	Watertown, Dak.
Achsa S. Parker,	A. B.	14	Norwalk, O.
Lewis Wallace Parker,	B. S.	6 1-5	Dubuque, Ia.
Walter Robert Parker,	B.S.(Mch.E.)	15 4-5	Marine City.
Sterling Parks,	A. B.	11 4-5	Collamer, O.
Horace Edwin Partridge,	A. B.		Flint.
William Henry Pease,	B. S.(C. E.)	10 4-5	Comstock.
Fred Blackburn Pelham,	B. S.(C. E.)	21 2-5	Detroit.
Fred Pennington,	B. L.	6 1-5	Charlotte.
Caroline Crosby Penny,	A. B.		Ann Arbor.
Ernest Blackman Perry,	Ph. B.	6 1-5	Ann Arbor.
Paul Victor Perry,	A. B.	13	Ann Arbor.
Samuel Kemp Pittman,	Ph. B.	17 3-5	Detroit.
Frank George Plain,	Ph. B.	12	Aurora, Ill.
Edwin Colfax Platt,	B. L.		Niles.
Willard Pope,	B. S.(C. E.)	13 1-5	Detroit.
Erastus Francis Potter,	A. B.	11 3-5	Tecumseh.
Waldo Theodore Potter,	B. L.		Vermontville.
John Havard Powell,	A. B.	U. (5)	Bowen, Ill.
Robert Bruce Preble,	A. B.	6 2-5	Chicago, Ill.
Fred Leroy Prentiss,	A. B.	4 3-5	Monroeville, O.
Charles Dando Prichard,	B. L.	3 2-5	Prichardville.
Anna Belle Purmort,	A. B.	17 4-5	Saginaw.
Harry Nelson Quigley,	A. B.	1 3-5	Grand Rapids.
William Butterfield Ramsey,	A. B.		Ann Arbor.
John Charles Ranacher,	A. B.	20 2-5	Cleveland, O.
Louise Fitz Randolph,	Ph. B.	4 3-5	Toledo, O.
Clayton Albert Read,	B. L.	U. (5)	Richland.
Fanny K. Read,	B. L.		Richland.
Robert Kennicott Reilly,	Ph. B.		Chicago, Ill.
Harold Remington,	A. B.	9 3-5	Cleveland, O.
Leon Josiah Richardson,	Ph. B.		Jackson.
John David Riker,	B. S.(Chem.)	11	Fenton.
Eugene Herbert Robertson,	B. L.		Ogden Centre.
Everett Charles Rockwood,	Ph. B.	5 4-5	Ottawa, Ill.
Charles Edward Roehl,	B. S.(C. E.)	14 3-5	Chicago, Ill.
George Ernest Roehm,	B. S.(C. E.)	18 3-5	Detroit.

NAME.	DEGREE.	COURSES.	RESIDENCE.
John Randolph Rogers,	B. S. (Chem.)		<i>Rome, Italy.</i>
Benno Ernest Rohnert,	B. S. (C. E.)	23 2-5	<i>Detroit.</i>
Fred Reed Romer,	B. S. (Mech. E.)		<i>Bay City.</i>
Charles Whitehall Root,	A. B.	140	<i>Ann Arbor.</i>
Gertrude Belle Rose,	A. B.	6 2-5	<i>Ann Arbor.</i>
Moritz Rosenthal,	B. L.	U. (5)	<i>Dixon, Ill.</i>
Filibert Roth,	B. S.	10	<i>Ann Arbor.</i>
Chester Harvey Rowell,	Ph. B.	10 3-5	<i>Bloomington, Ill.</i>
Cora Maria Rowell,	Ph. B.		<i>Bloomington, Ill.</i>
Arthur Eli Rowley,	Ph. B.	6 4-5	<i>North Fairfield, O.</i>
Webster S. Ruckman,	B. S.	19	<i>Saline.</i>
Joseph Rusche,	B. S. (C. E.)	13 3-5	<i>Grand Rapids.</i>
George Fred Rush,	Ph. B.	5	<i>Chicago, Ill.</i>
Edgar Ryan,	B. S. (C. E.)	10 4-5	<i>Virden, Ill.</i>
Louis Carlton Sabin,	B. S. (C. E.)	6 1-5	<i>Memphis.</i>
Homer Mason Sackett,	Ph. B.	6	<i>Waverly, Ill.</i>
Annie E. Sales,	B. L.		<i>Unadilla.</i>
Elmer Sanford,	B. S.	21 2-5	<i>Taylor, Ill.</i>
Oscar Frederick Schmid,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Paul Schneider,	B. L.	4-5	<i>Saginaw.</i>
Harry Rogers Seager,	Ph. B.		<i>Hancock.</i>
Charles J. Search,	A. B.	4 3-5	<i>Ann Arbor.</i>
Francis Morton Sessions,	Ph. B.	10 4-5	<i>Ann Arbor.</i>
Thomas Chalkley Severance, Jr.,	A. B.	6	<i>Walled Lake.</i>
Walter Webster Seymour,	B. S. (C. E.)		<i>LaPorte, Ind.</i>
Ralph Martin Shankland,	B. S. (C. E.)	11 2-5	<i>Canton, O.</i>
Fred Fraley Sharpless,	B. S. (Chem.)	11 2-5	<i>West Chester, Pa.</i>
Jesse Cornell Shattuck,	Ph. B.	18 2-5	<i>Owosso.</i>
Albert Morton Shaw,	B. S.	14	<i>Coesse, Ind.</i>
Edmund Jeremiah Shaw,	A. B.	16 4-5	<i>Big Rock, Ill.</i>
Edwin Spencer Shaw,	A. B.	13 1-5	<i>Ypsilanti.</i>
Hudson Sheldon,	A. B.		<i>Owosso.</i>
Albert Levern Shepard,	Ph. B.	5	<i>Spencerport, N. Y.</i>
Frederick David Sherman,	A. B.	17 2-5	<i>Grand Rapids.</i>
Mark Roger Sherman,	A. B.	17	<i>National, Ia.</i>
Jennie Belle Sherzer,	Ph. B.	13 1-5	<i>Franklin, O.</i>
Lizzie Ide Shiell,	A. B.	7	<i>Detroit.</i>
Henry Fish Shier,	Ph. B.	12 3-5	<i>Romeo.</i>
James Alfred Sinclair,	B. S. (Mch. E.)	17 4-5	<i>Bay City.</i>
Peter Godfrey Sjöblom,	A. B.		<i>Brainerd, Minn.</i>
James Lincoln Skinner,	B. S.	19	<i>St. Johns.</i>
Frances Adelia Slaght,	Ph. B.	19	<i>Grand Blanc.</i>
Clyde Sloane,	A. B.	11 2-5	<i>Carrolton, Ill.</i>
Honta Belle Smalley,	A. B.	12	<i>Chicago, Ill.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE
Albert Henry Smith,	B. S. (C. E.)		<i>Elkhart, Ind.</i>
Arthur Francis Smith,	Ph. B.	6 1-5	<i>Atchison, Kan.</i>
Barbara Allen Smith,	B. L.		<i>Charlotte.</i>
Ernest Warner Smith,	B. S.	2 1-5	<i>Pontiac.</i>
Frederic Latta Smith,	Ph. B.		<i>Lansing.</i>
John George Smith,	B. S. (C. E.)	7 4-5	<i>Bay City.</i>
Reuben Sherman Smith,	A. B.	14 2-5	<i>Grand Rapids.</i>
Walter Teis Smith,	A. B.	22 3-5	<i>Pekin, Ill.</i>
Warren Hadley Smith,	Ph. B.	12	<i>Ypsilanti.</i>
George Herbert Snow,	Ph. B.		<i>Winona, Minn.</i>
Josephine Eliza Sondericker,	A. B.		<i>Woodstock, Ill.</i>
Fred Bernard Spaulding,	A. B.	6 1-5	<i>Ann Arbor.</i>
Ernest Marshall Sprague,	B. S. (C. E.)	14	<i>Farmington.</i>
George Bowditch Springer,	B. S. (C. E.)	5	<i>Chicago, Ill.</i>
Gordon Edward Stannard,	B. S. (C. E.)	5 4-5	<i>Dexter.</i>
Will Jackson Stanton,	B. S.	4	<i>Oxford.</i>
Harmon Chamberlin St. Clair,	B. L.	6 2-5	<i>Bay City.</i>
Henry Porter Stearns,	B. S.		<i>Adrian.</i>
Wallace Holloway Steele,	B. S.		<i>Ann Arbor.</i>
Charles Burgess Stevens,	B. S.		<i>New York, N. Y.</i>
Edith Stevens,	B. L.		<i>Niles.</i>
K. Gertrude Stevens,	B. S.	20 3-5	<i>Niles.</i>
Francis Leslie Stevenson,	B. L.	13	<i>Detroit.</i>
Clement Richlieu Stickney,	A. B.	6 1-5	<i>Ann Arbor.</i>
Walter Savage Stillman,	A. B.	11 2-5	<i>Council Bluffs, Ia.</i>
John Edward Stillwell,	B. S.	13 4-5	<i>Big Rapids.</i>
Albert Brodie Stone,	Ph. B.		<i>Fayetteville, Ark.</i>
Herbert Joseph Stull,	B. S.	11	<i>Rochester, N. Y.</i>
Otho Sibley Stull,	B. S. (M. E.)	1 1-5	<i>Rochester, N. Y.</i>
Forest Glenwood Sweet,	Ph. B.		<i>Battle Creek.</i>
Arthur Charles Tagge,	B. S.		<i>Ann Arbor.</i>
James Eli Talley,	A. B.	6 2-5	<i>Brandywine Summit,</i>
Charles Philander Taylor,	Ph. B.	6 2-5	<i>Ottawa, Ill. [Pa.</i>
George Edward Taylor,	Ph. B.	19	<i>Ann Arbor.</i>
Eben A. Thomas,	A. B.	5 4-5	<i>Lapeer.</i>
Jerome Beers Thomas, Jr.,	A. B.	16 4-5	<i>National Mil. Home,</i>
Alvah Beech Thompson,	B. L.		<i>San José, Cal. [O.</i>
George Washington Thompson,	B. S. (M. E.)		<i>St. Johns.</i>
Julia Ruth Tolman,	A. B.	12 4-5	<i>Chicago, Ill.</i>
Lucius Edward Torrey,	B. L.		<i>Grand Rapids.</i>
Charles Orrin Townsend,	B. S.	13	<i>Saline.</i>
Laura Oliver Tupper,	B. S.	12	<i>Bay City.</i>
Dora Kate Ulber,	B. S.		<i>Ann Arbor.</i>
Oswald Daniel Vandersluis,	A. B.		<i>Grand Rapids.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Horace Van Deventer,	Ph. B.		Clinton, Ia.
Ashley Joseph Vantine,	B. S.		Portland, Ore.
Franklin Luppen Velde,	A. B.	23 1-5	Pekin, Ill.
Bert John Vos,	A. B.	8	Grand Rapids.
Mulford Wade,	Ph. B.		Cleveland, O.
George Joseph Waggoner,	A. B.	12 2-5	Ravenna, O.
Ebenezer Franklin Walbridge,	B. S. (C. E.)	10 3-5	Toledo, O.
Frank Banghart Walker,	Ph. B.	6 1-5	Lapeer.
William Henry Walker,	A. B.	20	Ann Arbor.
Frank Alsworth Waples,	Ph. B.	6 1-5	Ann Arbor.
James A. Wardlow,	A. B.	19 2-5	Kinsley, Kan.
John Charles Warmbier,	Ph. B.	18	Wyandotte.
John Bullene Warner,	A. B.		Kansas City, Mo.
Edwin Elijah Washburn,	Ph. B.	10 4-5	Houghton.
Charles Henion Webster,	B. S. (C. E.)	6 1-5	Ann Arbor.
Frank Enos Welch,	A. B.	16	Four Towns.
George Sherman Wells,	B. S. (Mech. E.)		Rochester.
Arthur Dorman Welton,	A. B.	5 2-5	Detroit.
Chester Wetmore,	B. S.	11 2-5	Allegan.
Earl Porter Wetmore,	B. S. (Mch. E.)	19 2-5	Concord.
John Howard Wetmore,	B. L.		Cheboygan.
Sara Whedon,	A. B.	6 2-5	Ann Arbor.
Henry Edward Whitaker,	B. S. (C. E.)	15	Forest City, Ill.
Florence Ella Whitcomb,	B. L.	14 1-5	Battle Creek.
Henry Kirk White,	Ph. B. U. (5)		Owosso.
Laura E. Whitley,	A. B.	12 3-5	Coldwater.
Philip Robert Whitman,	B. S.	6	Ann Arbor.
George Walton Whyte,	B. S. (Chem)	9 4-5	Geneva Lake, Wis.
Robert Bruce Wilcox,	B. S. (C. E.)	3 4-5	Chicago, Ill.
Thomas Lee Wilkinson,	B. S. (Mch. E.)	1 3-5	Davenport, Ia.
Orlando Bldgett Willcox, Jr.,	B. L.	5 4-5	Ann Arbor.
Carroll Williams,	B. L.		Wyoming, Ia.
Gardiner Stewart Williams,	B. S. (C. E.)	13 1-5	Saginaw.
Harry John Williams,	B. S. (Mch. E.)	12 4-5	New Rockland, Quebec.
Ruth Anna Willoughby,	Ph. B.	13	Ann Arbor.
Elmer Grant Willyoung,	B. S.	12 2-5	Detroit.
James Wilson,	B. S.		Wabash, Ind.
Horace Vaughn Winchell,	B. S.	5 4-5	Minneapolis, Minn.
Charles Shepard Withey,	B. L.		Grand Rapids.
Robert Henry Wolcott,	B. L.		Grand Rapids.
Irving Mason Wolverton,	B. S. (C. E.)		Flint.
Jessie Brown Wood,	B. L.		Ann Arbor.
Francis James Woolley,	Ph. B.	19 2-5	Homer.
Dean Conant Worcester,	A. B.	12 4-5	Thetford, Vtr.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Harry Bissell Wyeth,	B. L.	7 2-5	<i>St. Louis, Mo.</i>
Arlisle Margaret Young,	A. B.	8 4-5	<i>Grand Rapids.</i>
Henry Martin Young,	Ph. B.	6 1-5	<i>Clinton, Ia.</i>
Lewis Smith Young,	B. L.	6 3-5	<i>Harvard, Ill.</i>
Edwin Abraham Zumbro,	A. B.	8 2-5	<i>Browning, Mo.</i>

STUDENTS NOT CANDIDATES FOR DEGREES.

NAME.	RESIDENCE.
Minnie DeEtta Abbott,	<i>Parishville, N. Y.</i>
James Ware Adams,	<i>Normal, Ill.</i>
Annette Lorenda Ailes,	<i>Ann Arbor.</i>
John Burns Alexander,	<i>Buchanan.</i>
Bertha Montague Alger,	<i>Grand Rapids.</i>
Adelaide Greville Archer,	<i>Lansing.</i>
Elliott Talbot Austin,	<i>Ann Arbor.</i>
Harriet Emilie Berridge,	<i>Union Mills, Ind.</i>
Elijah Parks Bowman,	<i>Sundance, Wyoming.</i>
Louis Clare Boyle,	<i>Detroit.</i>
Bertha Brainerd,	<i>Flint.</i>
Lois Brown,	<i>Carthage, Mo.</i>
Mary Barbour Browne,	<i>Louisville, Ky.</i>
Sally Brown,	<i>Louisville, Ky.</i>
Clarence Marion Brown,	<i>Portland.</i>
Edwin Royal Burdick,	<i>Kalamazoo.</i>
Harry Johnson Carle,	<i>Wapella, Ill.</i>
Cora May Chapman,	<i>Ann Arbor.</i>
Benjamin Cluff, Jr.,	<i>Provo City, Utah.</i>
Elizabeth M. Coffin,	<i>Detroit.</i>
Allen Lysander Colton,	<i>Detroit.</i>
Lydia Cardelle Condon,	<i>Ann Arbor.</i>
Fandira Crocker,	<i>Mt. Clemens.</i>
William Edward Damon, Ph. C.,	<i>Ann Arbor.</i>
Mary Edna Dowdigan,	<i>Ann Arbor.</i>
Frederick Trempe Ducharme,	<i>Detroit.</i>
Robin Ernest Dunbar,	<i>South Bend, Ind.</i>
William Frank Edwards,	<i>Niles.</i>
Blanch Nettleton Epler,	<i>Jacksonville, Ill.</i>
Charles Edmund Filkins,	<i>Burton.</i>
Ella Evangeline Fincham,	<i>Petoskey.</i>
Carrie Flint,	<i>Nashua, Ia.</i>
Will Fowler,	<i>Wabash, Ind.</i>
John Evans Gernand,	<i>Rossville, Ill.</i>
Andrew Ellsworth Gibson,	<i>Ann Arbor.</i>

NAME.	RESIDENCE.
Morton Victor Gilbert,	<i>Nunda, Ill.</i>
John Gould,	<i>Colorado Springs, Col.</i>
Daniel Phillip Grant,	<i>Burlington, Ind.</i>
William Pickett Harris,	<i>Detroit.</i>
Edna Madeline Havens,	<i>Hastings.</i>
John Adams Heinson,	<i>Dayton, O.</i>
Henry Henley Hill,	<i>Charlottesville, Ind.</i>
Charles Arthur Howell,	<i>Adrian.</i>
Grace Louise Howell,	<i>Battle Creek.</i>
Otho Fairfield Humphreys,	<i>Ann Arbor.</i>
Charles Sumner Hyde,	<i>Grayling.</i>
Ireton Jackson,	<i>Lapeer.</i>
Alfred Eugene Jennings,	<i>Decatur.</i>
Walter Joseph Osborne Johnson,	<i>Taylorville, Ill.</i>
Winthrop Reed Kendall, LL. B.,	<i>Ann Arbor.</i>
Hattie Moseman Kennedy,	<i>Ionia.</i>
George Walter Kimball,	<i>Grand Rapids.</i>
Louise Rogers Kirkpatrick,	<i>Battle Creek.</i>
Charles Henry Kline, LL. B.,	<i>Ann Arbor.</i>
Leverge Knapp,	<i>Ouleout, N. Y.</i>
Seth Wells Knight,	<i>Utica.</i>
Etta Loughridge Knowles,	<i>Ottawa, O.</i>
John William Knox,	<i>Detroit.</i>
Jed Hannibal Lee,	<i>Brighton.</i>
Louis Briggs Lee,	<i>Brighton.</i>
Hilda Lodeman,	<i>Ypsilanti.</i>
Lottie Seibert Lodge,	<i>Hannibal, Mo.</i>
Grace Esther Loomis,	<i>Kewanee, Ill.</i>
William Swift Loomis,	<i>Ann Arbor.</i>
Louise Lunsford Loving,	<i>Ann Arbor.</i>
Lincoln Macmillan,	<i>Ann Arbor.</i>
Margaret Merrill,	<i>East Saginaw.</i>
Aura Miller,	<i>Ann Arbor.</i>
Grace Eliza Moore,	<i>Delphi, Ind.</i>
Selby Albert Moran,	<i>Ann Arbor.</i>
William Potwin Morgan,	<i>Highland Park, Ill.</i>
Frank Irwin Muir,	<i>Erie.</i>
Hachadoor K. Nahigian,	<i>Harpoot, Turkey.</i>
James Burton Nelson,	<i>Bloomington, Ind.</i>
Andrew Richard Nichols,	<i>Beach City, O.</i>
John Alden Nichols,	<i>Ann Arbor.</i>
Julia Ann O'Connor,	<i>La Porte, Ind.</i>
Alfred Draper Ottewell,	<i>Derby, Eng.</i>
George W. Parker,	<i>Milton.</i>

NAME.	RESIDENCE.
David Paull,	<i>Calumet.</i>
Jennie Evelyn Perry,	<i>Detroit.</i>
Mary Elizabeth Phelps,	<i>Ann Arbor.</i>
John Burton Phillips,	<i>Holt.</i>
Mabel Randall,	<i>Coldwater.</i>
Percy Hunt Richardson,	<i>Portland, Me.</i>
Belle Roberts,	<i>Westfield, Ind.</i>
Marie Rominger,	<i>Ann Arbor.</i>
Lillie Emma Rosewarne,	<i>Decatur.</i>
Annie Amelia Shryver,	<i>Ann Arbor.</i>
Grace Scrafford,	<i>Seneca, Kan.</i>
Mary Gertrude Sheehan,	<i>Niles.</i>
Lizzie Mary Sheppard,	<i>Carbondale, Ill.</i>
Fred Myron Sisson,	<i>Allegan.</i>
Evelyn Amanda Smith,	<i>Ann Arbor.</i>
Sophonra Leland Stevens,	<i>Ann Arbor.</i>
William Wirt Stevens,	<i>Niles.</i>
Henrietta Stickel,	<i>Logansport, Ind.</i>
Henry Penny Strong,	<i>Detroit.</i>
Koh Ichi Takasaki,	<i>Tokio, Japan.</i>
Herbert Amos Thompson,	<i>St. Johns.</i>
Harvey B. Twitmyer,	<i>Zion, Pa.</i>
Ada Louise Upson,	<i>Ann Arbor.</i>
Esther Boise Van Deman,	<i>Emporia, Kan.</i>
Susie May Walker,	<i>St. Johns.</i>
Belle Brown Waller,	<i>Ann Arbor.</i>
George Alex Wheeler,	<i>Northfield, Minn.</i>
Burton J. Whitcomb,	<i>Oxford.</i>
Mark William Williams,	<i>Ann Arbor.</i>
Samuel Averill Wilson,	<i>Harrison.</i>
Nathan Putnam Wood,	<i>Dubuque, Ia.</i>

DEPARTMENT
OF
Medicine and Surgery.

FACULTY.

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EDWARD S. DUNSTER, A. M., M. D.,
JOHN W. LANGLEY, S. B., M. D.,
HENRY SEWALL, PH. D.,
WILLIAM J. HERDMAN, PH. B., M. D.,
VICTOR C. VAUGHAN, PH. D., M. D.,
CHARLES H. STOWELL, M. D.

HENRY WADE ROGERS, A. M.,
Lecturer on the Law relating to Physicians.

GEORGE A. HENDRICKS, M. S., M. D.,
JAMES N. MARTIN, PH. M., M. D.,
THOMAS J. SULLIVAN, M. D.,
CHARLES K. MCGEE, A. B.,
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OSBOURNE F. CHADBOURNE, M. D.,
WILLIAM A. CAMPBELL, M. D.,
HENRY K. LUM, M. D.,
JOHN H. ANDRUS, M. D.,
MARY H. CULLINGS, M. D.

STUDENTS.

RESIDENT GRADUATE.

NAME.	RESIDENCE.
Harry Arthur March, M. D.,	<i>Bridgewater, Nova Scotia.</i>

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
John Frederick Abbott,	<i>Lima, Ind.,</i>	Faculty.
Justina Southgate Anderson,	<i>Salt Lake City, U.,</i>	Faculty.
Oliver Elmer Ellsworth Arndt,	<i>Easton, Pa.,</i>	P. F. Arndt.
William Tisdell Atkinson,	<i>Croswell,</i>	Henry McCrea.
Leonard Chester Backus,	<i>Bridgewater, O.,</i>	E. H. Rorick.
James Kleckner Bartholomew,	<i>Elkhart, Ind.,</i>	J. A. Work.
Roxie Ellen Bates,	<i>Oak Shade, O.,</i>	J. H. Bennett.
Arthur Bennett,	<i>Ann Arbor,</i>	Faculty.
Edward Samuel Blair, A. B.,	<i>Forreston, Ill.,</i>	Faculty.
<i>Allegheny College.</i>		
Josephine Dorr Blake, A. B.,	<i>Dansville, N. Y.,</i>	Faculty.
<i>Vassar College.</i>		
Ada Bock,	<i>Akron, O.,</i>	Faculty.
Henry Boss,	<i>Zeeland,</i>	A. G. Manting.
Augusta Mulford Brewer,	<i>East Orange, N. J.,</i>	Faculty.
Lyman Augustus Brewer,	<i>Hillsdale,</i>	Whelan & Son.
Arthur H. Brownell, A. B.,	<i>Clinton, N. Y.,</i>	Faculty.
<i>Hamilton College</i>		
William Edward Buschman,	<i>Manitowoc, Wis.,</i>	Faculty.
Mary Elizabeth Clark, B. L.,	<i>Ann Arbor,</i>	Faculty.
Miles Harrison Clark, A. B.,	<i>Ripon, Wis.,</i>	Sidney S. Hall.
<i>Williams College.</i>		
Frank Smith Coller,	<i>Athens,</i>	E. H. Coller.
William J. Coppernoll,	<i>Lacona, N. Y.,</i>	Drs. Skiff & Richards.
Walter Arn strong Cowie,	<i>Valens, Ont.,</i>	Faculty.
Lancelot B. Dawson,	<i>Pontiac,</i>	Faculty.
John Webb Decker,	<i>Pinckney,</i>	H. F. Sigler.
Homor George Emery,	<i>Ann Arbor,</i>	Faculty.
Elizabeth Martha Farrand,	<i>Ann Arbor,</i>	Faculty.
Ashble Howard Fassett,	<i>Meshoppen, Pa.,</i>	A. T. & G. A. Brundage.
Charles Mark Freeman,	<i>Victor,</i>	Faculty.
Louis Al ert Fritsche,	<i>New Ulm, Minn.,</i>	Faculty.
Charles Beamin Fry,	<i>Palmyra, Wis.,</i>	Queen's University.
John Clark Gauntlett,	<i>York,</i>	A. G. Mesic.
Edward Branford Gibson,	<i>Detroit,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Leon Mitchel Gillette,	<i>Battle Creek,</i>	A. H. Kimball.
Mary Edna Goble.	<i>Kalamazoo,</i>	Faculty.
George Gundlach,	<i>New Design, Ill.,</i>	V. C. Vaughan.
Addie Emma Gurd,	<i>Courtright, Ont.,</i>	Faculty.
George Clinton Hafford,	<i>Milan,</i>	E. F. Pyle.
George Andrew Hare,	<i>Battle Creek,</i>	J. H. Kellogg.
Jessie Daniells Hare,	<i>Battle Creek,</i>	J. H. Kellogg.
Leonard Francis Hatch,	<i>Whitman, Mass.,</i>	Faculty.
Kate Annabelle Hathaway,	<i>Rochester, N. Y.,</i>	Faculty.
Grant Sumner Hicks,	<i>Monticello, Ia.,</i>	I. H. Phillips.
Homer Dwight Hodge,	<i>Concord,</i>	Faculty.
Charles John Hood,	<i>Adrian,</i>	Faculty.
Benjamin Franklin Horner,	<i>Belleville,</i>	A. L. Van Horn.
Gotthelf Charles Huber,	<i>Attica, N. Y.,</i>	Faculty.
Philo Hull,	<i>Albion,</i>	Faculty.
Gilbert Bastedo Johnston,	<i>Waterdown, Ont.,</i>	J. O. McGregor.
William Murray Johnston,	<i>Centreville, N.Br'k</i>	John R. Hagerman.
Frank Miner Kerry, B. S.,	<i>Ann Arbor,</i>	C. C. Johnson.
Hillsdale College		
June kichi Kimura,	<i>Aichi Ken, Japan,</i>	Faculty.
George Washington Lacey, B. L.	<i>Bringinghurst, Ind.,</i>	Faculty.
Otto Landmann, Ph. B.,	<i>Toledo, O.,</i>	Faculty.
Ella Marx,	<i>Toledo, O.,</i>	Faculty.
George McIntyre,	<i>Port Huron,</i>	Faculty.
Jennette Matilda McLaren,	<i>Woodstock, Ill.,</i>	Faculty.
David Decker McNaughton,	<i>Port Sanilac,</i>	Thomas Hosack.
Burton Albion Meacham,	<i>Fort Jackson, N. Y.,</i>	Faculty.
George Leonard Meyer,	<i>Stone Arabia, N. Y.,</i>	S. A. Wessels.
Mary Howell Miller,	<i>Detroit,</i>	Faculty.
Wilmot Fred Miller,	<i>Tamaqua, Pa.,</i>	C. B. Dreher.
Frank Daniel Myers,	<i>Unionville, N. Y.,</i>	H. McD. Struble.
Otto Negelspach,	<i>Millersburg, O.,</i>	A. H. Tuttle.
Henry Palmer, Ph. C.,	<i>St. Johns,</i>	Faculty.
Thomas Charles Phillips, B. S.	<i>Calumet,</i>	Faculty.
Lyston Hull Druett Pierce,	<i>Fulton,</i>	Faculty.
Edward Joseph Price,	<i>Rochester, N. Y.,</i>	Charles S. Starr.
John Abbott Prince,	<i>Jacksonville, Ill.,</i>	Faculty.
Eugene V. Riker. A. B.,	<i>Ann Arbor,</i>	A. W. Riker.
Alpheus Worley Ringer,	<i>Galigher, O.,</i>	John W. Ringer.
Edward Alexander Runyan,	<i>Linden,</i>	Faculty.
Albert Franklin Schaefer,	<i>South Bend, Ind.,</i>	J. A. Ketting.
Minnie Elizabeth Sinclair,	<i>Sarnia, Ont.,</i>	Faculty.
Peter Franklin Smith,	<i>Dunbar, Pa.,</i>	R. W. Clark.
William Hoffman Stauffer,	<i>Constantine,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Frederick Charles Thompson,	<i>New Baltimore,</i>	Faculty.
Edward R. Wagner, A. M.,	<i>Ann Arbor,</i>	Faculty.
Michael Eugene Whalen,	<i>Goblesville,</i>	C. S. Maynard.
Almond Henry Wicks,	<i>Hopkins,</i>	Faculty.
Esther Gilbert Willoughby,	<i>Owosso,</i>	Faculty.
William Henry Winslow,	<i>Carmel, Ind.,</i>	Faculty.
Thomas Michael Winters,	<i>Fitchburg,</i>	Faculty.
Frank Paine Witter,	<i>Putnam, Conn.,</i>	John Witter.
Nellie Ida Woodworth,	<i>Nunda, N. Y.,</i>	C. H. Sample.
Charles D'Abbs Wright,	<i>Brookings, Dak.,</i>	G. J. Collier.
Wilbur Clarence Wright,	<i>St. Johns,</i>	Faculty.

SECOND YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Christina Anderson, B. S., Knox College.	<i>Greene, Ia.,</i>	Faculty.
James Henry Anderson,	<i>Constantine,</i>	B. P. Schoville.
Lewis John Carrick Baily,	<i>New Glasgow, N. S.</i>	Faculty.
Herbert Anthony Barney,	<i>West Union, N. Y.,</i>	N. P. Brainard.
Corydon Orlan Beardsley,	<i>Ottawa, O.,</i>	C. E. Beardsley.
Fred Rice Belknap, B. S., Norwich University.	<i>Niles,</i>	S. Belknap.
Lewis Jerome Belknap,	<i>Battle Creek,</i>	J. H. Kellogg.
Alexander Jay Braden,	<i>Battle Creek,</i>	Faculty.
Francis William Brewer,	<i>Southampton, Eng.</i>	Faculty.
Mathilde Buck,	<i>Philadelphia, Pa.</i>	Faculty.
Frank Edward Bunting,	<i>Wayne,</i>	Faculty.
Fred L. Burdon,	<i>Sutherland's Corners, Ont.</i>	W. F. Roome.
William Robert A. Carley,	<i>S. Fallsburgh, N. Y.</i>	E. Quinlan.
Frank Chaffee,	<i>Saginaw,</i>	Faculty.
Emma Earle Chenault,	<i>Lexington, Ky.,</i>	Faculty.
Joshua Monocton Chesebro,	<i>Ann Arbor,</i>	H. M. McKay.
Oramel Ozro Chesebro,	<i>Ann Arbor,</i>	G. H. Ney.
Arthur Hamilton Coe,	<i>Ft. Assiniboine, Mon.,</i>	F. J. Adams.
Frantz Hunt Coe, A. B.,	<i>Ann Arbor,</i>	Faculty.
Madison James Conant, A. B., Kalamazoo College.	<i>New Baltimore,</i>	R. C. Leacock.
Edwin Henry Condit,	<i>Morley,</i>	C. R. McNulty.
George Hall Conklin,	<i>Battle Creek,</i>	Faculty.
James William Dalbey, B. S., Illinois College	<i>Springfield, Ill.,</i>	Faculty.
Mary Gage Day,	<i>Offerle, Kan.,</i>	Burt G. Wilder.
Celia Louise Dowse, A. M., Alfred University.	<i>Whitehall,</i>	J. H. Kellogg.

NAME.	RESIDENCE.	PRECEPTOR.
John Whalen Doyle,	<i>Paw Paw.</i>	Faculty.
Presca Isaac Edwards,	<i>Jackson,</i>	W. A. Gibson.
Herbert P. Ewell, Ph. C.,	<i>Utica,</i>	Faculty.
Earl Fairbanks,	<i>Luther,</i>	H. W. Hammond.
Josa Theresa Fleming,	<i>Dexter,</i>	Faculty.
Charles Augustus Fletcher, B.S.	<i>Kalamazoo,</i>	Faculty.
<i>Kalamazoo College.</i>		
Zeri H. Fodrea,	<i>Westfield, Ind.,</i>	Faculty.
Paul Smith Fox,	<i>Ann Arbor,</i>	Faculty.
Benjamin Nathan Gardner,	<i>Okemos,</i>	Faculty.
Elmer Daily Gardner,	<i>Lapeer,</i>	H. McColl.
Jefferson Gould,	<i>Grand Blanc,</i>	Faculty.
Will Lyman Griffin, B. S.,	<i>Albion,</i>	E. S. Parmenter.
<i>Albion College.</i>		
James Lawrence Halsey,	<i>Southampton, N. Y.</i>	J. N. Nugent.
Daniel W. Harrington,	<i>Oshkosh, Wis.,</i>	G. M. Steele.
Frederick Smith Heller,	<i>Oak Harbor, O.,</i>	M. A. Hughes.
Ernestine Julia Hicks,	<i>Battle Creek,</i>	W. J. Fairfield.
Walter Raleigh Hicks,	<i>Menominee,</i>	J. H. Hicks.
Charles Hines,	<i>Forest Grove, Ore.,</i>	Faculty.
Andrew John Hoenes,	<i>Battle Creek,</i>	Faculty.
Nellie Hollister,	<i>Norwalk, O.,</i>	A. L. Osborn.
Walter William Hotchkiss,	<i>Meadville, Pa.,</i>	John C. Cotton.
Clementine L. Houghton, B. L.,	<i>Ann Arbor,</i>	Faculty.
Henry Hulst, A. M.,	<i>Grand Rapids,</i>	Shepard & Haka.
<i>Hope College.</i>		
James Gordon Jackson,	<i>Montague,</i>	Faculty.
Marcus Whitfield Jewell,	<i>Pontiac,</i>	Faculty.
Adrian Reginald Karreman,	<i>Grand Rapids,</i>	Louis Bartle.
Darwin Keith,	<i>North Fairfield, O.,</i>	D. M. Keith.
Horace Manley Lane,	<i>Carthage, Mo.,</i>	Faculty.
Lida Powers Leasure,	<i>Auburn, Ind.,</i>	D. J. & V. W. Swartz.
Andrew S. Lobingier, A. B.,	<i>Laurelville, Pa.,</i>	Faculty.
Bradford Churchill Loveland,	<i>Clifton Springs, N. Y.,</i>	Faculty.
James Gifford Lynds,	<i>Hopewell, New Brunswick,</i>	Faculty.
Charles Webster Macdade,	<i>Hagerstown, Md.,</i>	R. T. Harman.
George William Mahoney,	<i>Decatur,</i>	G. L. Rose.
Charles Frederick Massbacher,	<i>East Saginaw,</i>	F. Massbacher.
Archibald J. McKillop,	<i>Wallacetown, Ont.,</i>	Faculty.
Jay Lucullus McLaren,	<i>East Saginaw,</i>	F. Duncan.
William Francis Metcalf,	<i>Bayside, Ont.,</i>	Faculty.
Delbert Joseph Miller,	<i>North Benton, O.,</i>	Faculty.
John Isaac Newcomb,	<i>Fayette, O.,</i>	Faculty.
William Edwin Newton, A. B.	<i>Corvallis, Ore.,</i>	Faculty.
<i>Oregon Agricultural College.</i>		

NAME.	RESIDENCE.	PRECEPTOR.
Zeovia Owen,	Dansville, N. Y.,	E. D. Leffingwell.
Francis Peele,	Philadelphia, Pa.,	Faculty.
Archibald Peterson,	Lockport, Nova Scotia,	A. D. Patten.
Ida May Porter,	Connellsville, Pa.,	Faculty.
Charles William Prettyman,*	Defiance, O.,	Faculty.
Vernet Edward Prevost,	Russell Hill, Pa.,	Faculty.
Bert Bessac Rowe,	Manchester,	Faculty.
*Charles Melville Ruggles,	Peru, O.,	Faculty.
Frank Charles Sarrazin,	Lake Linden,	Faculty.
Henry William Schmidt,	Manchester,	J. A. Lynch.
Douglas Sewall,	Ann Arbor,	Faculty.
Montague Shore,	Winnipeg, Man.,	Faculty.
Isaac Wright Short,	La Grange, Ind.,	W. H. & J. L. Short.
John Frederick Siefert,	New Hamburg, Ont.,	Faculty.
Adnah D. Smith,	Ann Arbor,	Faculty.
Belle Hamilton Smith,	St. Johns,	Faculty.
Kate Snyder, A. B.,	Ann Arbor,	Faculty.
Indiana University.		
William H. Snyder, B. L.,	Ann Arbor,	Faculty.
Indiana University.		
Willis Edward Sterrs,	Montgomery, Ala.,	Faculty.
Charles Edson Stickney,	East Constable, N. Y.,	Arthur A. Wilber.
Mary Strong,	Omaha, Neb.,	E. K. Ogden.
Edith Estelle Taylor,	Tompkinsville, Pa.,	Faculty.
Thomas Henry Trainor,	Ottawa, Ill.,	Faculty.
Horace Webster,	Daggett's Mill, Pa.,	O. S. Nye.
Emanuel Sherman Wenger.	Haw Patch, Ind.,	N. R. Wenger.
Josephine West,	East Saginaw,	C. H. Sample.
Amos Solon Wheelock.	Bridgewater,	Faculty.
Fred Davis Whitehead,	Chataqua, N. Y.,	Faculty.
Horace Wilcox,	Wakefield, R. I.,	John A. Wilcox.
Rolla A. Willet,	Elmore, O.,	P. Willet.
Seymour Syria Williams,	Tarkio, Mo.,	Faculty.
Charles Atkinson Winans,	Benton Harbor,	Faculty.

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Christopher Adamson,	Morden, Man.,	Faculty.
James Adamson,	Madison, Wis.,	Faculty.
Adrian Richard Alfred,	Jeddo,	A. A. West.
Leighton Pine Allen,	South Bend, Ind.,	Faculty.
Bion Arnold,	Ypsilanti,	Faculty.
Lizzie Daniel Rose Atkinson,	W. Newton, Mass.,	Faculty.

*Deceased.

NAME.	RESIDENCE.	PRECEPTOR.
Eunice Jemima Avery,	<i>Hillsdale,</i>	Faculty.
Thomas James Avery,	<i>Ann Arbor,</i>	Faculty.
Henry Francis Barnes,	<i>Waynesburgh, O.,</i>	J. M. Bye.
Joseph D. Bennett,	<i>Litchfield,</i>	L. A. Howard.
Thomas Stewart Blair,	<i>Chambersburg, Pa.</i>	George S. Hull.
John Alexander Blake,	<i>Hillsborough, N. Br'k.,</i>	Faculty.
Elmer Julius Boeseke,	<i>Santa Barbara, Cal.,</i>	Faculty.
George Johnson Boyd,	<i>Black Hawk, Pa.,</i>	T. G. Boyd.
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Peter John Lehman,	<i>Chelsea.</i>
Frederick C. Lewis,	<i>Toledo, O.</i>
James Thomas Locke,	<i>Canon City, Col.</i>
Harry Almon Lovett, A. B., Acadia College.	<i>Kentville, Nova Scotia.</i>
Vincent Silas Lumley,	<i>Ringwood, Ill.</i>
Loyal Johnston Martin,	<i>Carthage, Dak.</i>
U. S. Grant Martin,	<i>Carson City.</i>
George Hamilton Mason,	<i>Denver, Col.</i>
Frank Malvern Mather,	<i>Cleveland, O.</i>
Yasukuni Matsudaira,	<i>Tokio, Japan.</i>
Ralph Clapp McAllaster,	<i>Ann Arbor.</i>
Fred Higham McDermont,	<i>Lake City, Minn.</i>
Oscar Beauford McGlasson,	<i>Winchester, Ill.</i>
Josiah S. McKean,	<i>Dundee, O.</i>
Robert Graham McKee, A. M., Centre College.	<i>Danville, Ky.</i>
Francis McNulty,	<i>Croswell.</i>
John Barton Mecham,	<i>Mazon, Ill.</i>
Eli Thompson Messenbaugh,	<i>Proctorville, Mo.</i>
Benton Middlekauff,	<i>Denver, Col.</i>
Glen Vincent Mills,	<i>Boyne City.</i>
James Troy Moloney,	<i>Grand Rapids.</i>
Chilton Monroe,	<i>Charleston, Ill.</i>
Frank Cleveland Moore,	<i>Eau Claire, Wis.</i>
Frank Latham Moore,	<i>Douglas, Minn.</i>
William Henry Moore, A. B., State College of Kentucky.	<i>Shelbyville, Ky.</i>
Hugh Coventry Morris, A. B., Albion College.	<i>Marlette.</i>
Daniel Lawrence Morrison,	<i>Springfield, Neb.</i>
Henry Mervale Morrow,	<i>Niles,</i>
Henry Richard Morse,	<i>Ann Arbor.</i>
John William Mowen,	<i>Lima, O.</i>

NAME.	RESIDENCE.
August Edward Muentzer,	<i>Stockton, Cal.</i>
George Henry Murdoch, Jr.,	<i>Berrien Springs.</i>
John Allen Murphy,	<i>Flatwoods, Pa.</i>
William Monreith Murphy,	<i>Appleton, Minn.</i>
James Carson Needham, Ph. B.,	<i>Bantas, Cal.</i>
University of the Pacific.	
Charles Vincent O'Connor,	<i>Sioux City, Ia.</i>
Frederick Clayton Olney,	<i>Wakefield, R. I.</i>
John Atherton Pattee,	<i>Ann Arbor.</i>
William Lewis Parmenter,	<i>Lima, O.</i>
Kosko Rolla Peet,	<i>Ithaca.</i>
Newton Austin Phelps,	<i>Ann Arbor.</i>
John Alvin Pierce,	<i>Chicago, Ill.</i>
Robert Frank Porter,	<i>Minneapolis, Minn.</i>
John Burris Prior,	<i>Chicago, Ill.</i>
James Marion Reed,	<i>Perrysville, O.</i>
Alexander Frederic Reichmann,	<i>Le Mars, Ia.</i>
Charles Leroy Richardson,	<i>Sedalia, Mo.</i>
William Henry Rote,	<i>Detroit.</i>
John Henry Rozema,	<i>Fremont.</i>
John Rezim Sapp,	<i>Grand Rapids.</i>
William Devore Scott,	<i>Elizabeth, Pa.</i>
Charles McCorn Simpson,	<i>Janesville, Ia.</i>
Robert Lemon Sleeth, Jr.,	<i>Pittsburgh, Pa.</i>
George Washington Smith,	<i>Lebanon, Ind.</i>
George Bourdillon Stewart,	<i>Fort Madison, Ia.</i>
Amzi Wood Strong,	<i>Merrifield, N. Y.</i>
William Franz Struckman,	<i>Elgin, Ill.</i>
Minoki Suzuki,	<i>Tokio, Japan.</i>
Horace Vandeburg Swartwout,	<i>Homer.</i>
Kiyotoshi Sugimoto,	<i>Tosa, Japan.</i>
Willis Atwood Taylor,	<i>Hudson, Wis.</i>
Henry Terrell,	<i>San Antonio, Tex.</i>
Alonzo S. Thomas, M. D.,	<i>Ann Arbor.</i>
Rush Medical College.	
Alexander Rankin Thompson,	<i>The Dalles, Ore.</i>
Charles William Thomson,	<i>Port Sanilac.</i>
Cyril M. Tift,	<i>Hutchinson, Minn.</i>
Merrill C. Tift,	<i>Hutchinson, Minn.</i>
Tracy Lay Towner,	<i>Ypsilanti.</i>
Leander Theodore Turner,	<i>Modesto, Cal.</i>
William Harvey Turner,	<i>Fort Wayne, Ind.</i>
Mark Dayton Tyler,	<i>Kendallville, Ind.</i>
John Quincy Van Swearingen,	<i>Uniontown, Pa.</i>

DEPARTMENT OF LAW.

NAME.	RESIDENCE.
Meade Vestal,	<i>Noblesville, Ind.</i>
Ernst Ludwig Von Suessmilch,	<i>Delavan, Wis.</i>
Osmar Lysander Waller, Ph. M., Hillsdale College.	<i>Ann Arbor.</i>
Price Donner West, A. B., De Pauw University.	<i>Huntertown, Ind.</i>
Nicholas Patrick Whelan,	<i>Utica, N. Y.</i>
Gardner Kessler Wilder,	<i>Honolulu, Hawaiian Ids.</i>
Harvey Orlando Wilkinson, B. S., Union Christian College.	<i>Crawfordsville, Ind.</i>
Robert Carlton Wilkinson,	<i>Coloma.</i>
Louis Charles Williams,	<i>Union Grove, Wis.</i>
Levi M. Wise,	<i>Harmony, Pa.</i>
Henry Sigismund Woolner,	<i>Peoria, Ill.</i>
George Bassett Yerkes,	<i>Northville.</i>
John Elsworth Young,	<i>Pequaming.</i>

School of Pharmacy.

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ALBERT B. PRESCOTT, PH. D., M. D.,

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GEORGE E. FROTHINGHAM, M. D.,

WILLIAM H. PETTEE, A. M.,

JOHN W. LANGLEY, S. B., M. D.,

VICTOR C. VAUGHAN, PH. D., M. D.,

VOLNEY M. SPALDING, A. B.,

BYRON W. CHEEVER, A. M., M. D.,

OTIS C. JOHNSON, PH. C., A. M.,

LOUISA REED STOWELL, M. S.,

ALVISO B. STEVENS, PH. C.

STUDENTS.

RESIDENT GRADUATE.

NAME.

RESIDENCE.

Edsel Alexander Ruddiman, Ph. C.,

Ann Arbor.

SECOND YEAR STUDENTS.

NAME.

RESIDENCE.

Charles Baker, B. S.,

Bancroft.

Michigan Agricultural College.

Herman Louis Barie,

Detroit.

Adam John Baumhardt,

Brownhelm, O.

NAME.	RESIDENCE.
Emery Rice Beal,	<i>Northville.</i>
Louis Britten Carr,	<i>Ann Arbor.</i>
Joseph Martin Croman,	<i>South Lyon.</i>
William Henry Doehne,	<i>New Ulm, Minn.</i>
William Arnold Dothany, B. S., Michigan Agricultural College.	<i>Farmington.</i>
Louis A. Dryfoos,	<i>Fremont, O.</i>
Richard Southard Dupont,	<i>Detroit.</i>
Leroy Adelbert Ellis,	<i>Ottawa, O.</i>
Samuel Slokom Hance,	<i>Farmington.</i>
Florence Edith Hendershott,	<i>Irving.</i>
Fred Joseph Henning,	<i>Coldwater.</i>
Wilber Fisk Jackman, B. S.,	<i>Armada.</i>
William Richard Johnson,	<i>Steubenville, O.</i>
Mervin A. Jones,	<i>Dimondale.</i>
Benjamin Silvanus Krause,	<i>Ann Arbor.</i>
Willis Leisenring, B. S., Michigan Agricultural College.	<i>South Haven.</i>
Edward Hall Marshall, A. B., Wabash College.	<i>Indianapolis, Ind.</i>
Andrew Stuart Mitchell,	<i>Milwaukee, Wis.</i>
Albert Jennings Pemberton,	<i>Fayetteville, N. C.</i>
Gustave Adolph Reule,	<i>Ann Arbor.</i>
Julius Otto Schlotterbeck,	<i>Ann Arbor.</i>
Darius Parsons Shuler,	<i>Ypsilanti.</i>
Clayton Joseph Standart,	<i>Elma, N. Y.</i>
George Ballard Topping,	<i>De Witt.</i>
Abraham Van Zwaluwenburg,	<i>Drenthe.</i>
Willard McKenzie Warren,	<i>Dexter.</i>
Charles Delos Wiley,	<i>Lansing.</i>

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.
Chalmers Pennington Allen,	<i>West Bay City.</i>
Charles Walter Allison,	<i>Vernon.</i>
Robert Romy Baldwin,	<i>Fort Scott, Kan.</i>
Charles Vincent Boetcher,	<i>Cambridge, O.</i>
Hadsell Byron Darby,	<i>Waterloo, Ind.</i>
William Frederick Eberbach,	<i>Ann Arbor.</i>
Ervin Edgar Ewell,	<i>Washington.</i>
Fred Nathaniel Faller,	<i>Fremont, O.</i>
Watson W. Fordham,	<i>Elmira.</i>

NAME.	RESIDENCE.
Albert Balm Francis,	<i>Olivet.</i>
Francis Albert Greene,	<i>Ann Arbor.</i>
Charles Meigs Harrison,	<i>Napoleon, O.</i>
Richard Ernest Hawkes,	<i>Plainwell.</i>
Dorsey Presley Horine,	<i>Englewood, Ill.</i>
Albert Prentice Hough,	<i>Jackson.</i>
Masato Kawamura,	<i>Tokio, Japan.</i>
Samuel Kidder, Jr.,	<i>Almont.</i>
Charles Farwell Lawson, B. S.,	<i>Brighton.</i>
Michigan Agricultural College.	
Henry Levy,	<i>Huntington, Ind.</i>
Matthew Murphy,	<i>Decatur.</i>
Albert Oechsler,	<i>Toledo, O.</i>
Herman Adolph Passolt,	<i>East Saginaw.</i>
John Elmer McClintock Pennington,	<i>Charlotte.</i>
Frank Bertrand Raynale,	<i>Ann Arbor.</i>
Andrew Edward Ruse,	<i>Nashville.</i>
John Henry Shaper,	<i>Canajoharie, N. Y.</i>
Marie Rozinda Smith,	<i>Hudson.</i>
Edward Conrad Soetje,	<i>Monticello, Ia.</i>
Wilford Cotton Stryker, B. S.,	<i>Albion.</i>
Michigan Agricultural College.	
Eugene Stanberry Upson,	<i>Ann Arbor.</i>
Ezra Jones Ware,	<i>Grand Rapids.</i>
Chauncey Newell Waterman,	<i>Winona, Minn.</i>
John A. Wesener,	<i>Owosso.</i>
Joseph Burgess Whinery,	<i>Wilmington, O.</i>
Frank Davis Wiseman,	<i>Tiffin, O.</i>
Karl George Zwick,	<i>Covington, Ky.</i>

Homœopathic Medical College.

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DAVID F. MCGUIRE, M. D.,

DANIEL A. McLACHLAN, M. D.

GEORGE G. CARON, M. D.,

HAROLD B. WILSON, B. S., M. D.,

FRANK A. JOHNSON, A. B., M. D.

STUDENTS.

RESIDENT GRADUATES.

NAME.	RESIDENCE
.Olive Artemisia Baldwin, M. D., Hahnemann College.	<i>Huntsville, Tex.</i>
Mary Weeks Burnett, M. D., Hahnemann College.	<i>Chicago, Ill.</i>

STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
George Dute Arndt,	<i>Grand Rapids,</i>	H. R. Arndt.
Annie Amelia Backhouse,	<i>Aylmer, Ont.,</i>	Faculty.
George Lake Bailey,	<i>Morrice,</i>	J. S. Wheelock.

NAME	RESIDENCE.	PRECEPTOR.
William Frederick Brooks,	<i>Parma,</i>	O. S. Hartson.
Daniel B. DeLand Cady,	<i>Wayne,</i>	J. L. Cady.
John Stuart Campbell,	<i>North Branch,</i>	G. W. Campbell.
Elizabeth Stacy Carey,	<i>Bradford, Ont.,</i>	Faculty.
Albert Burton Clark,	<i>Kingsley Station,</i>	J. H. Hoag.
Mary Ann Cooke,	<i>Norwalk, O.,</i>	Olive L. Eddy.
Roy Samuel Copeland,	<i>Dexter,</i>	E. F. Chase.
William A. Cotton,	<i>Saranac,</i>	E. A. Gesler.
Guy Coulter,	<i>Columbus, O.,</i>	Faculty.
Lottie Ann Curtis,	<i>Ionia,</i>	Faculty.
Edward Arthur Darby,	<i>Hastings, Neb.,</i>	A. R. Van Sickle.
Sallie Maria Davis,	<i>Milford, Del.,</i>	William Marshall.
Denias Dawe,	<i>Deerfield,</i>	William Wood.
Ella Kyes Dearborn,	<i>Saginaw,</i>	L. A. Melze.
William Casson Dunks,	<i>Union City,</i>	Faculty.
Walter Newton Fowler,	<i>Tecumseh,</i>	R. B. House.
Charles Ernest Giddings,	<i>Madison, Wis.,</i>	Faculty.
Annis Sarah H. Gooding,	<i>Ypsilanti,</i>	A. R. Wheeler.
Lizzie Amanda Hendershott,	<i>Irving,</i>	Faculty.
Cora Yan Hill,	<i>Minneapolis, Minn.,</i>	Faculty.
George Willard Kishpaugh,	<i>Clinton,</i>	Faculty.
Mary Ann Knapp,	<i>Owosso,</i>	M. E. Knapp.
John Hancock Lawrence,	<i>Leslie,</i>	Faculty.
Sarah Idella Lee,	<i>Rochester, N. Y.,</i>	J. M. Lee.
Matilda Jamison Lyons,	<i>Cadiz, O.,</i>	Rachel M. Watson.
Charles Albert Macrum,	<i>Forest Grove, Ore.,</i>	Faculty.
William H. McKee, A.M., LL.B.	<i>Grand Rapids,</i>	H. R. Arndt.
Union College.		
James Archey McLachlan,	<i>Ann Arbor,</i>	D. A. McLachlan.
Arabella Merrill,	<i>Astoria, Ill.,</i>	Faculty.
Samuel George Milner, A. M.,	<i>Grand Rapids,</i>	H. R. Arndt.
Mary Anna Morley,	<i>Bay City,</i>	Faculty.
Lucy Ann Morehouse,	<i>Cohoctah,</i>	Faculty.
Margarette Murray,	<i>Portsmouth, O.,</i>	Faculty.
Hervey Edwards Noble,	<i>Fayetteville, N. Y.,</i>	Faculty.
Thomas Henry Oliver,	<i>Jefferson, O.,</i>	E. J. Cortleyon.
Elisa Louise Orleman,	<i>Detroit,</i>	P. Porter.
Mary Emalissa Peck,	<i>Rexford Flats, N. Y.,</i>	C. T. Harris.
Hutoka Lucy Porter,	<i>Black River Falls, Wis.,</i>	Faculty.
Eugene Woodman Ruggles,	<i>Hartford,</i>	Faculty.
Laban Henry Shank,	<i>Flint,</i>	Faculty.
Earl Fuller Shaw,	<i>Lowell,</i>	A. B. Grant.
Duncan James Sinclair,	<i>Ridgetown, Ont.,</i>	L. Sutton.
Walter Longyor Slack,	<i>Fenton,</i>	Leonard E. Knapp.

NAME.	RESIDENCE.	PRECEPTOR.
Melancthon B. Snyder, A. B., Westminster College.	<i>Slippery Rock, Pa.</i>	Benjamin Pearson.
Sue McGlaughlin Snyder,	<i>Slippery Rock, Pa.</i>	J. S. Rankin.
Rollin Howard Stevens,	<i>Chatham, Ont.</i>	S. Sutton.
Rodney Chester Taylor,	<i>St. Louis, Mo.</i>	Faculty.
Mary Ella Thompson, A. B.,	<i>Lapeer,</i>	Faculty.
William L. Thompson, A. B., Oberlin College.	<i>Oberlin, O.</i>	Faculty.
William Isaac Tyler,	<i>Portland,</i>	George D. Allen.
Boyle Vance,	<i>Springfield, Ill.</i>	Faculty.
Nina Eurania Walker,	<i>Salem Station,</i>	Jane A. Walker.
George Henry Weeks,	<i>Chicago, Ill.</i>	Mary Weeks Burnett.
Annette Haseltine Wheelock,	<i>Minneapolis, Minn.</i>	Faculty.
Jerome Bonaparte Wheelock,	<i>Minneapolis, Minn.</i>	Faculty.
Zilpha Rosannah Wheelock,	<i>Bancroft,</i>	J. S. Wheelock.
Miranda Poyer Wiswell, B. L., Delaware College.	<i>Milford, Del.</i>	William Marshall.

College of Dental Surgery.

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JONATHAN TAFT, M. D., D. D. S.,

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CORYDON L. FORD, M. D., D. D. S.,

JOHN A. WATLING, D. D. S.,

WILLIAM H. DORRANCE, D. D. S.

ELSIE A. HALLOCK, D. D. S.

STUDENTS.

RESIDENT GRADUATE.

NAME.

RESIDENCE.

Harry Williamson Davis, D. D. S., . . . Ottawa, Kan.

STUDENTS.

NAME.

RESIDENCE.

PRECEPTOR.

Ernest Lee Avery,

Howell,

C. A. Wing.

Frank Corington Babcock,

Galva, Ill.,

J. P. Huston.

George Beavis, L. D. S.,

Newport, Eng.,

R. B. Boulton.

Royal College of Surgeons, Ireland.

NAME.	RESIDENCE.	PRECEPTOR.
Horace Albert Benson,	Norwalk, O.,	H. F. Killmeyer.
Clarence Walker Berry,	Ann Arbor,	Faculty.
William Townsend Binzley,	New Brighton, Pa.,	Faculty.
Harriette Parkes Brierley,	Stalybridge, Eng.,	J. L. Crapper.
Walter Herman Burdick,	Little Genesee, N. Y.	Faculty.
Elwin Butts,	McGregor, Ia.,	Faculty.
Charles C. Cherryholmes,	Millersburg, O.,	Faculty.
Edwin Charles Clow,	Duluth, Minn.,	C. S. Allen.
Gilbert Eli Corbin, M. D.,	St. Johns,	Faculty.
Almon Dewhirst,	Pittsford,	L. Balcom.
Edward Lincoln Dillman,	Normal Park, Ill.,	William L. Campbell.
Elmer Llewellynn Drake,	Ann Arbor,	A. J. Drake.
Rollin Edward Drake,	Flint,	Faculty.
William Fraser Dunlop,	Alpena,	W. M. Winchester.
Frank Howard Essig,	Owosso,	Faculty.
William Burton Flynn,	Ann Arbor,	Faculty.
William Andrew Fortuin,	Vriesland,	H. A. Fortuin.
Sherman M. Fowler,	Nashville,	J. C. Andrus.
Jeronimo J. Garcia,	Panama City, U.S. of Col.	Dr. Sell.
Fred William Gordon,	Detroit,	H. E. Dennett.
Bert Frank Hall,	Flint,	B. F. Miller, C. E. Root.
Louis Phillips Hall,	Ann Arbor,	Faculty.
Almer Myron Harrison,	Delaware, O.,	Steeves & Mitchell.
David Alexander Harroun,	Toledo, O.,	C. H. Harroun.
Elmer Bertrand Hause,	Tecumseh,	M. M. Fessenden.
Clark Center Hawes,	Wauseon, O.,	W. S. Myers.
Harry Duncan Heller,	Saline,	Faculty.
Peter Monroe Hendershott,	Fostoria, O.,	Faculty.
Clarence Eugene Henderson,	Ann Arbor,	Faculty.
William Carly Herbert,	Detroit,	Faculty.
James Bailey Hoar,	Northville,	E. N. Root.
Horace Nathaniel Holmes,	Livermore, Col.,	Faculty.
Oliver Wendell Huff,	Fort Scott, Kan.,	A. Doud.
Edwin Robert Jeanneret,	Ligonier, Ind.,	A. Gants.
Reuben John Kirk,	Genoa, O.,	Faculty.
Fred Adolph Kotts,	Manchester,	Faculty.
Cyreno Nathaniel Leonard,	Cleveland, O.,	W. P. Horton & Son.
Egbert T. Loeffler, B. S., (C.E.)	Saginaw,	Faculty.
John Thomas Martin,	Detroit,	Faculty.
Otto Marx,	Toledo, O.,	Faculty.
Edward Clark Maxwell,	Carleton,	O. J. Fay.
Thomas Stuart Maxwell,	Columbus, Wis.,	E. Churchill.
William Archie McDaniel,	Birmingham, Ala.,	Eubank Bros.
Lewis Henry McDonald,	Norwalk, O.,	M. G. Furlong.

NAME.	RESIDENCE.	PRECEPTOR.
Charles Edward Meerhoff,	<i>Richmond, Ind.,</i>	W. N. Wilson.
Richard Edward Moll,	<i>Blissfield,</i>	B. C. Moll.
Irvin Myers,	<i>Cassopolis,</i>	C. H. Funk.
Rudolph Paul Nagle,	<i>Milwaukee, Wis.,</i>	E. H. Wanko.
Harry Cox Nickels,	<i>Ann Arbor,</i>	Faculty.
Joseph Lawrence Nordike,	<i>Peru, Ind.,</i>	Faculty.
Charles Franklin Noyes,	<i>North Adams,</i>	John T. Crume.
Charles Walter Nutting,	<i>Spring Valley, Minn.,</i>	Faculty.
Edwin Tecumseh Papst,	<i>Lexington,</i>	J. W. Norman.
Homer Ellsworth Parshall,	<i>Pontiac,</i>	Faculty.
Edward Everett Paxson,	<i>South Bend, Ind.,</i>	Faculty.
Arthur Mowry Potter,	<i>Orchard Lake,</i>	Faculty.
William Arthur Powers,	<i>Bay City,</i>	H. B. Hulbert.
William Orlando Randall,	<i>Maysville,</i>	Faculty.
Frank J. Raymond,	<i>LaHarpe, Ill.,</i>	W. O. Butler.
Henry Charles Raymond,	<i>Newport, Eng.,</i>	George Beavis.
Shekla Reuter,	<i>Madison, Wis.,</i>	R. W. Hurd.
Arthur Richardson,	<i>Ann Arbor,</i>	Faculty.
Henry William Riser,	<i>Lansing, Ia.,</i>	Faculty.
George Irwin Robb,	<i>Orangeville, Ont.,</i>	W. J. Hare.
Martha Josephine Robinson,	<i>Cleveland, O.,</i>	J. E. Robinson.
Evert Benjamin Rosenkrans,	<i>Binghamton, N.Y.,</i>	Charles W. McCall.
William Daniel Saunders,	<i>Ann Arbor,</i>	Faculty.
Fred Clarence Sawyer,	<i>Ann Arbor,</i>	Faculty.
Henry Martin Seybold,	<i>Ann Arbor,</i>	Faculty.
Michael Cornelius Sheehan,	<i>Ann Arbor,</i>	Faculty.
Adelbert Westel Showerman,	<i>Waukesha, Wis.,</i>	Faculty.
Frank Leslie Small,	<i>Anoka, Minn.,</i>	Faculty.
Eva Claire Smith,	<i>Xenia, O.,</i>	Faculty.
Lucius Chipman Smith,	<i>Ann Arbor,</i>	Frank Seger.
Daniel Hubbard Squire,	<i>Lisle, N. Y.,</i>	James S. Squire.
Clarence John Burr Stephens,	<i>Flint,</i>	B. F. Miller, C. E. Root.
James C. Stevens,	<i>Ann Arbor,</i>	Faculty.
Patrick James Sullivan,	<i>Ann Arbor,</i>	Faculty.
Will Taylor,	<i>Owensboro, Ky.,</i>	J. H. Taylor.
Griffith Pritchard Terry,	<i>Milan, Italy,</i>	J. A. Watling.
Martin Dogener Vandenberg,	<i>Grand Haven,</i>	A. Rysdorp.
Miguel Angel Velazquez,	<i>San José, Costa Rica,</i>	Faculty.
Frank Prescott Watson,	<i>Salem, Mass.,</i>	Faculty.
Alfred Frederick Webster,	<i>Toronto, Ont.,</i>	Faculty.
Charles Henry Worboys,	<i>Detroit,</i>	C. E. DeBow.
Walter Thomas Wright,	<i>Ann Arbor,</i>	Faculty.
William Adelbert Wright,	<i>Hastings,</i>	J. C. Andrus.

Addenda.

The following name should be added to the list of Resident Graduates in the Department of Literature, Science, and the Arts, page 165.

NAME.		RESIDENCE.
Fred Manville Taylor, A. M., Northwestern University.	U. (5)	<i>Albion.</i>

The following name should be added to the list of Students not Candidates for Degrees in the Department of Literature, Science, and the Arts, page 178.

NAME.	RESIDENCE.
John Edgar Lessey,	<i>Englewood, Ill.</i>

SUMMARY OF STUDENTS.

Department of Literature, Science, and the Arts.

RESIDENT GRADUATES.....	25
GRADUATES STUDYING <i>in absentia</i>	17
CANDIDATES FOR A DEGREE.....	540
STUDENTS NOT CANDIDATES FOR A DEGREE.....	111 — 693

Department of Medicine and Surgery.

RESIDENT GRADUATE.....	1
THIRD YEAR STUDENTS.....	85
SECOND YEAR STUDENTS.....	98
FIRST YEAR STUDENTS.....	137 — 321

Department of Law.

SENIORS.....	162
JUNIORS.....	176 — 338

School of Pharmacy.

RESIDENT GRADUATE.....	1
SECOND YEAR STUDENTS.....	30
FIRST YEAR STUDENTS.....	36 — 67

Homœopathic Medical College.

STUDENTS—Total in the College.....	62
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Collège of Dental Surgery.

STUDENTS—Total in the College.....	91
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1,572

SUMMARY BY STATES

AND BY DEPARTMENTS.

STATE OR COUNTRY.	Department of Literature, Science, and the Arts.	Department of Medicine and Surgery.	Department of Law.	School of Pharmacy.	Homeopathic Medical Col- lege.	College of Dental Surgery.	Total.
Michigan.....	416	147	108	43	32	45	791
Illinois.....	23	14	33	1	4	3	128
Ohio.....	40	24	27	10	6	12	119
Indiana.....	28	14	23	3	..	4	72
New York.....	21	29	8	2	3	3	68
Pennsylvania.....	11	18	23	..	2	1	55
Iowa.....	21	3	13	1	..	2	40
Minnesota.....	14	3	10	2	3	3	35
Wisconsin.....	6	6	6	1	2	4	24
Kansas.....	7	2	8	1	..	2	20
Missouri.....	7	3	9	..	1	..	20
California.....	4	1	13	..	..	1	19
Kentucky.....	3	2	7	1	..	1	14
Dakota.....	1	4	3	..	..	..	8
Massachusetts.....	3	4	..	..	..	1	8
Nebraska.....	..	1	6	..	1	..	8
Oregon.....	1	3	3	..	1	..	8
Colorado.....	3	..	4	..	..	..	7
Utah.....	3	1	3	..	..	..	7
Maine.....	2	..	3	..	..	..	5
Montana.....	3	1	1	..	..	..	5
Maryland.....	..	2	2	..	..	..	4
Arkansas.....	3	..	..	..	..	..	3
Connecticut.....	1	1	1	..	..	..	3
Idaho.....	..	..	3	..	..	..	3
New Jersey.....	1	1	1	..	..	..	3
Texas.....	1	..	1	..	1	..	3
Alabama.....	..	1	..	..	..	1	2
Delaware.....	..	..	..	..	2	..	2
New Hampshire.....	..	1	1	..	..	..	2
Rhode Island.....	..	1	1	..	..	..	2
Vermont.....	1	1	..	..	..	..	2
Virginia.....	..	..	2	..	..	..	2
District of Columbia.....	1	..	..	..	..	..	1
North Carolina.....	..	..	..	1	..	..	1
West Virginia.....	1	..	..	..	..	..	1
Wyoming.....	1	..	..	..	..	..	1
Ontario.....	..	20	3	..	4	2	29
Japan.....	2	1	5	1	..	..	9
New Brunswick.....	..	4	2	..	..	..	6
England.....	1	1	..	..	..	3	5
Nova Scotia.....	..	4	1	..	..	..	5
Hawaiian Islands.....	..	..	3	..	..	..	3
Italy.....	1	..	..	..	..	1	3
Manitoba.....	..	2	..	..	..	..	2
Turkey.....	1	1	..	..	..	..	2
Costa Rica.....	..	..	..	..	..	1	1
Guatemala.....	..	..	1	..	..	..	1
Province of Quebec.....	1	1
Russia.....	1	1
United States of Columbia.....	1	1
Total.....	693	321	338	67	62	91	1,572

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FOR THE YEAR 1886-87.

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CALENDAR

Edw 2/5 770.405

—OF THE—

UNIVERSITY OF MICHIGAN

—FOR—

1887-88.

—♦♦—

ANN ARBOR:
PUBLISHED BY THE UNIVERSITY,
1888.

CALENDAR

—OF THE—

UNIVERSITY OF MICHIGAN

—FOR—

1887-88.



ANN ARBOR:
PUBLISHED BY THE UNIVERSITY,
1888.

By mail

The Courier Printing House, Ann Arbor, Mich.

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ANNOUNCEMENTS FOR 1888-89.

1888.

- | | | |
|-------------------|---------|---|
| January | 10. | University Exercises resumed after Holiday Vacation. |
| February | 17. | (Evening.) FIRST SEMESTER CLOSES. |
| February | 20. | SECOND SEMESTER BEGINS. |
| March | 23. | (Evening.) Recess begins, ending April 2, (evening). |
| June | 15, 16. | <i>Examination for Admission to the School of Pharmacy.</i> |
| June | 23, 25. | <i>Examination for Admission to the Department of Literature, Science, and the Arts.</i> |
| June | 24. | <i>Baccalaureate Address.</i> |
| June | 26. | <i>Class Day.</i> |
| June | 27. | <i>Alumni Day.</i> |
| June | 28. | COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY.
Summer Vacation begins. |
| September 24-28. | | <i>Examination for Admission to the Department of Literature, Science, and the Arts.</i> |
| September 27, 28. | | <i>Examination for Admission to the Department of Law.</i> |
| September 28. | | <i>Examination for Admission to the Department of Medicine and Surgery.</i> |
| September 28, 29. | | <i>Examination for Admission to the School of Pharmacy, and to the Homœopathic Medical College.</i> |
| September 29. | | <i>Examination for Admission to the College of Dental Surgery.</i> |
| October | 1. | FIRST SEMESTER BEGINS IN ALL DEPARTMENTS OF THE UNIVERSITY. |
| November | —. | Thanksgiving Recess of three days, beginning Tuesday evening, in all Departments of the University. |
| December | 21. | (Evening.) Holiday Vacation begins in all Departments. |

1889.

- | | | |
|----------|-----|--|
| January | 8. | Exercises resumed. |
| February | 15. | (Evening.) FIRST SEMESTER CLOSES. |
| February | 18. | SECOND SEMESTER BEGINS. |
| March | 22. | (Evening.) Recess begins, ending April 1, (evening). |
| June | 27. | COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY. |

1888.							1889.						
JANUARY.							JULY.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	8	9	10	11	12	13	14
15	16	17	18	19	20	21	15	16	17	18	19	20	21
22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30	31	--	--	--	--	29	30	31	--	--	--	--
FEBRUARY.							AUGUST.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
--	--	--	1	2	3	4	--	--	--	1	2	3	4
5	6	7	8	9	10	11	5	6	7	8	9	10	11
12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	--	--	--	26	27	28	29	30	31	--
MARCH.							SEPTEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
4	--	--	--	1	2	3	4	--	--	--	--	1	2
5	6	7	8	9	10	11	5	6	7	8	9	10	11
12	13	14	15	16	17	18	12	13	14	15	16	17	18
19	20	21	22	23	24	25	19	20	21	22	23	24	25
26	27	28	29	30	31	--	26	27	28	29	30	31	--
APRIL.							OCTOBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	8	9	10	11	12	13	14
15	16	17	18	19	20	21	15	16	17	18	19	20	21
22	23	24	25	26	27	28	22	23	24	25	26	27	28
29	30	--	--	--	--	--	29	30	31	--	--	--	--
MAY.							NOVEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
--	--	1	2	3	4	5	--	--	--	1	2	3	4
6	7	8	9	10	11	12	6	7	8	9	10	11	12
13	14	15	16	17	18	19	13	14	15	16	17	18	19
20	21	22	23	24	25	26	20	21	22	23	24	25	26
27	28	29	30	31	--	--	27	28	29	30	31	--	--
JUNE.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
--	--	--	--	1	2	3	--	--	--	--	--	--	1
4	5	6	7	8	9	10	4	5	6	7	8	9	10
11	12	13	14	15	16	17	11	12	13	14	15	16	17
18	19	20	21	22	23	24	18	19	20	21	22	23	24
25	26	27	28	29	30	31	25	26	27	28	29	30	31

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* In place of Hon. James F. Joy, resigned.

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23 South Division Street.

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† Died December 23, 1887.

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* Absent on leave.

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- CHARLES N. JONES, A. B., *Professor of Applied Mathematics.* 16 Forest Avenue.
- CHARLES F. STERLING, M. D., *Professor of Ophthalmology and Otology in the Homœopathic Medical College.* 99 Cass Street, Detroit.

* Absent on leave.

- HENEAGE GIBBES, M. D., *Professor of Pathology.* 33 Ann Street.
- BYRON W. CHEEVER, A. M., M. D., *Acting Professor of Metallurgy.* 28 Packard Street.
- CALVIN B. CADY, *Acting Professor of Music.* 46 Washtenaw Avenue.
- JOSEPH B. DAVIS, C. E., *Assistant Professor of Civil Engineering.* 51 South Ingalls Street.
- RICHARD HUDSON, A. M., *Assistant Professor of History.* 40 South Ingalls Street.
- OTIS C. JOHNSON, PH. C., A. M., *Assistant Professor of Applied Chemistry.* 52 South Thayer Street.
- JEROME C. KNOWLTON, A. B., *Assistant Professor of Law.* 77 East Huron Street.
- JOHN DEWEY, PH. D., *Assistant Professor of Philosophy.* 84 South State Street.
- CHARLES M. GAYLEY, A. B., *Assistant Professor of English and Rhetoric.* 16 Bowery Street.
- NEVILLE S. HOFF, D. D. S., *Assistant Professor of Practical Dentistry.*
- JACOB E. REIGHARD, PH. B., *Acting Assistant Professor of Zoölogy.* 32 South Ingalls Street.
- HENRY B. BROWN, LL. D., *Lecturer on Admiralty Law.* 712 Jefferson Avenue, Detroit.
- MELVILLE M. BIGELOW, PH. D., *Lecturer on Equity.* Boston, Mass.
- WILLIAM G. HAMMOND, LL. D., *Lecturer on the History of Common Law.* St. Louis, Mo.
- BRADLEY M. THOMPSON, M. S., LL. B., *Lecturer on Real Property.* East Saginaw.
- P. R. B. DEPONT, A. B., B. S., *Instructor in French.* 23 Jefferson Street.
- ALFRED HENNEQUIN, PH. D., *Instructor in French and German.* 68 East Huron Street.
- LOUISA REED STOWELL, M. S., *Assistant in Microscopical Botany.* 79 South State Street.
- GEORGE A. HENDRICKS, M. S., M. D., *Instructor in Anatomy.* 6 Forest Avenue.
- ARTHUR W. BURNETT, A. M., *Instructor in English.* 28 Packard Street.
- WALTER MILLER, A. M., *Instructor in Latin.* Corner of East University Avenue and Packard Street.

- ANDREW C. McLAUGHLIN, A. B., *Instructor in History.*
85 South State Street.
- ALVISO B. STEVENS, PH. C., *Instructor in Pharmacy.*
15 Church Street.
- JOHN M. SCHAEBERLE, C. E., *Instructor in Astronomy.* Observatory.
- CLARENCE G. TAYLOR, B. S., *Superintendent of Shops in
Engineering Laboratory.* 20 South University Avenue.
- THOMAS C. TRUEBLOOD, A. M., *Teacher of Elocution.*
Corner of Hill Street and East University Avenue.
- STEDMAN WILLARD CLARY, A. M., *Instructor in Modern
Languages.* 28 Packard Street.
- FREDERIC L. WASHBURN, A. B., *Instructor in Zoölogy.*
41 South Thayer Street.
- LUDOVIC ESTES, A. M., *Instructor in Mathematics.* 20 Church Street.
- FREDERICK G. NOVY, M. S., *Instructor in Hygiene and
Physiological Chemistry.* 53 South Fifth Street.
- CONRAD GEORGE, M. D., *Instructor in Materia Medica.* 87 Main Street.
- JOSEPH F. McCULLOCH, A. B., *Instructor in Mathematics.*
47 Packard Street.
- JAMES N. MARTIN, PH. M., M. D., *Lecturer on Oral Pathol-
ogy and Surgery in the College of Dental Surgery, and
Assistant to the Professor of Obstetrics.* 49 Liberty Street.
- * CHARLES K. MCGEE, A. B., *Assistant in General Chem-
istry.*
- WILLIAM A. CAMPBELL, M. D., *Assistant in Microscopy
and General Histology.* 21 South State Street.
- JOSEPH H. VANCE, LL. B., *Assistant Librarian, in charge
of the Law Library.* Ann Arbor Town.
- KATE C. JOHNSON, PH. C., *Dispensing Clerk in the Chemical
Laboratory.* 52 South Thayer Street.
- CHARLES L. DAVIS, PH. C., *Assistant in the Chemical Lab-
oratory.* 27 North University Avenue.
- IDA ANN MORRISH, M. L., *Assistant in the General Library.*
4 North State Street.
- ELSIE A. HALLOCK, D. D. S., *Assistant to the Professor of
Clinical Dentistry.* 96 South State Street.

* Absent on leave.

- FRANK A. JOHNSON, A. B., M. D., *Assistant to the Professor of Surgery and Clinical Surgery, and to the Professor of Ophthalmology and Otology in the Homœopathic Medical College.* 21 South State Street.
- FRED NEWTON SCOTT, A. B., *Assistant in the General Library.* 11 Tappan Street.
- JOHN S. CAMPBELL, M. D., *Assistant to the Professor of Materia Medica in the Homœopathic Medical College, and Resident Physician and Surgeon in the Homœopathic Hospital.* Homœopathic Hospital.
- SAMUEL G. MILNER, A. M., M. D., *Assistant to the Professor of Obstetrics and the Diseases of Women and Children, and to the Professor of Theory and Practice of Medicine in the Homœopathic Medical College.* 23 North University Avenue.
- ABRAM VAN ZWALUWENBURG, PH. C., *Assistant in Pharmacognosy and Pharmacy.* 3 Geddes Avenue.
- GEORGE GUNDLACH, M. D., *Resident Physician and Surgeon in the University Hospital.* University Hospital.
- GEORGE W. LACEA, B. L., M. D., *Wardmaster in the University Hospital.* University Hospital.
- MINNIE E. SINCLAIR, M. D., *Wardmistress in the University Hospital.* University Hospital.
- THOMAS C. PHILLIPS, B. S., M. D., *Assistant to the Professor of Materia Medica and Ophthalmic and Aural Surgery.* Hamilton Block.
- JOSHUA S. BLANCHARD, M. D., *Assistant to the Professor of Pathology and the Practice of Medicine, and Clinical Medicine.* 35 Ann Street.
- GOTTHELF C. HUBER, M. D., *Assistant Demonstrator of Anatomy.* 48 West Huron Street.
- JOHN F. EASTWOOD, PH. D., *Assistant in Organic Chemistry, and Aid in General Chemistry.* 20 South University Avenue.
- ELMER SANFORD, B. S., *Assistant to the Professor of Physiology.* 16 South University Avenue.

UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

The University of Michigan is a part of the public educational system of the State. The governing body of the institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the constitution of the State. In accordance with the law of the State, the University aims to complete and crown the work that is begun in the public schools, by furnishing ample facilities for liberal education in literature, science, and the arts, and for thorough professional study of medicine, pharmacy, law, and dentistry. Through the aid that has been received from the United States and from the State it is enabled to offer its privileges, without charge for tuition, to all persons, of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the institution to all students, wherever their homes. It is in this broad, generous, and hospitable spirit, that the University has been founded, and that it endeavors to do its work.

ORGANIZATION OF THE UNIVERSITY.

The University comprises the Department of Literature, Science, and the Arts (including the School of Political Science), the Department of Medicine and Surgery, the Department of Law, the School of Pharmacy, the Homœopathic Medical College, and the College of Dental Surgery. Each of these Departments and Colleges has its Faculty of instruction, who are charged with the special management of it. The University Senate is composed of all the Faculties, and considers questions of common interest and importance to them all.

In the Department of Literature, Science, and the Arts, different lines of study lead to the attainment of the degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science, Bachelor of Letters, the corresponding Masters' degrees, the degrees of Doctor of Philosophy, Doctor of Science, and Doctor of Letters, and the degrees of Civil Engineer, Mechanical Engineer, and Mining Engineer. When the same degree is given for different lines of study, this fact is indicated in the diploma. Students that do not wish to become candidates for a degree, may, if they are prepared to enter the University, pursue selected studies for such a time, not less than one semester, as they may choose.

In the professional schools the instruction is given largely by lectures. Degrees are given to graduates as follows: In the Department of Medicine and Surgery, the degree of Doctor of Medicine; in the Department of Law, the degree of Bachelor of Laws; in the School of Pharmacy, the degrees of Pharmaceutical Chemist and Master of Pharmacy; in the Homœopathic Medical College, the degree of Doctor of Medicine; in the College of Dental Surgery, the degree of Doctor of Dental Surgery.

Students in any department of the University may enter the classes in any other, upon obtaining permission from the Faculties of the respective departments.

THE LIBRARIES.

The libraries of the University are the General Library, the Medical Library, the Law Library, and the Library of the Dental College. They contain in the aggregate 62,398 volumes, 12,411 unbound pamphlets, and 264 charts.

The GENERAL LIBRARY contained Sept. 30, 1887, including the special collections known as the Parsons Library, the Mc-Millan Shakespeare Library, the Library of the School of Political Science, and the German-American Goethe Library, 48,971 volumes, 11,549 unbound pamphlets, and 264 charts.

The Parsons Library was collected by Professor C. H. Rau, of Heidelberg University. At his death it was offered for sale, and was bought and presented to the University in 1871 by the Hon. Philo Parsons, of Detroit. It contains with recent additions made by Mr. Parsons, 4,325 volumes and

5,000 pamphlets. It is especially rich in European works on the science of government, statistics, and political economy.

The nucleus of the McMillan Shakespeare Library was the valuable Shakespearian collection of 750 volumes made by Col. E. H. Thompson, of Flint. This was bought and presented to the University in 1882, by James McMillan, Esq., of Detroit, who at the same time provided the means for making additions to it. By a careful use of the means thus provided the collection has been increased to 3,100 volumes of text, criticism, and Shakespeariana. Among other purchases were 425 volumes and pamphlets from the well known Shakespearian Library of Mr. Joseph Crosby, of Zanesville, Ohio.

The Library of the School of Political Science, purchased with means provided in 1882 by James J. Hagerman, Esq., a graduate of this University, class of 1861, is practically a collection of great serial publications, of which there may be named, for the purpose of illustration, the *Calendar of State Papers of Great Britain*, *Petitot's Collection Complète des Mémoires relatifs à l' Histoire de France*, and the *Preussische Jahrbuch*. It contains at present 2,600 volumes.

The German-American Goethe Library has been founded and will be augmented from funds contributed for the purpose by a large number of persons in Michigan and other States. The donors are chiefly, though not exclusively, Germans. A portion of the money raised will be expended immediately in the purchase of editions of Goethe, and *Ana*; the remainder will be invested and the income only used. The number of volumes bought thus far, is 760.

The catalogue of the Library is the usual card catalogue of authors and subjects. The contents of the periodicals taken, as well as other matter, appear on the subjective cards. The whole work is kept carefully up to date.

One hundred and twenty-five American and European periodicals are taken.

Members of the Faculties and other officers of the University may draw books from the Library, subject to certain restrictions. To all other persons it is a reference library. The reading room for general use will seat 210 readers. Separate rooms for advanced students are provided where work is pursued with the necessary books at hand.

The MEDICAL LIBRARY, containing 3,447 volumes and 862 unbound pamphlets, is shelved with the General Library, and is consulted under the same regulations. Forty-four medical journals are regularly received.

The LAW LIBRARY occupies the large room on the first floor of the law building. In 1885 it was doubled in extent by the generosity of Christian H. Buhl, Esq., of Detroit, who pre-

sented to the University a large collection of law books. This Library now contains 9,565 volumes.

The LIBRARY OF THE DENTAL COLLEGE is shelved in a room in the dental building. It contains several sets of valuable periodicals and many of the most important treatises on dentistry. It contains 415 volumes.

The two Literary Societies in the Department of Literature, Science, and the Arts, have also good libraries.

The Students' Christian Association connected with the University has a well selected library of moral and religious works.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is known as the Detroit Observatory, having been founded through the liberality of citizens of Detroit. Valuable additions and improvements have been made by means of further contributions from the same source, and from the city of Ann Arbor, and also by appropriations made by the Board of Regents. The building consists of a main part, with a movable dome, and two wings. The east wing contains the large meridian circle presented by Mr. Henry N. Walker, of Detroit. It was constructed by Pistor & Martins, of Berlin, and is one of the largest and best of the kind. The same wing contains a sidereal clock, made by Tiede, of Berlin, and the collimators for the meridian circle. The west wing contains the library of the Observatory, and the smaller instruments, and connects with the residence of the Director. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late Henry Fitz, of New York.

A small observatory used in the work of instruction has been erected on the observatory grounds, near the main building. It contains an equatorial telescope of six inches aperture, and a transit instrument of three inches aperture, with zenith telescope attachment. A building near by contains computing rooms and rooms for observers, and a work-shop where necessary repairs and attachments for the instruments can be made.

A set of self-registering meteorological instruments, consisting of Hough's barograph and thermograph, and an anemograph, is a part of the outfit.

THE MUSEUMS.

The collections in the University Museums illustrative of Natural History, Industrial Arts, Archæology, Ethnology, the Fine Arts, History, Anatomy, and Materia Medica, are constantly increasing. The Museums are in charge of Curators as follows: The Museum of Fine Arts and History, Prof. Frieze; the collections in Zoölogy, Archæology, and Ethnology, Prof. Steere; the collections in Mineralogy, Prof. Pettee; the collections in Geology, Prof. Winchell; the collections in Botany, Prof. Spalding; the Museum of Applied Chemistry, Prof. Prescott; the Museum of the Department of Medicine and Surgery, Dr. Hendricks; the Homœopathic Medical Museum, Dr. Obetz; the Dental Museum, Dr. Dorrance.

The collections are arranged in such a way as to render them accessible both to students and to visitors. The University affords a secure depository for objects of value and curiosity, and it is therefore hoped that frequent gifts will be made to its several museums.

The new museum building now contains the collections in Mineralogy, Geology, Zoölogy, Industrial Arts, Archæology, and Ethnology. The collections of works of Art, including historical medallions and coins, are in the new Art Gallery.

The following description will indicate the character of the several collections belonging to the University:

I. NATURAL HISTORY.

I. The MINERALOGICAL COLLECTION comprises about 6,000 specimens. It embraces about 2,500 specimens (principally European) purchased of the late Baron LEDERER, and known as the LEDERER COLLECTION; and, besides others, a rich collection of the MINERAL SPECIES OF MICHIGAN, including all varieties of copper ore and associated minerals from the different localities of the Lake Superior mining district.

II. The GEOLOGICAL COLLECTION consists of:

1. The large and complete series of lithological and palæontological specimens brought together by the State geological surveys, of which

over a hundred fossil species have already become the types of original description.

2. The WHITE COLLECTION, consisting of 1,018 distinct entries, 6,000 specimens.

3. The ROMINGER COLLECTION, embracing about 2,500 entries, 6,000 specimens, mostly from the mesozoic formations of central Europe. This collection embraces about 500 specimens of mesozoic ammonites.

4. SMITHSONIAN DEPOSITS, consisting, for the present, of a collection of specimens of foreign and domestic building stones, and twenty-three specimens of fossils from the Upper Missouri.

5. MISCELLANEOUS DONATIONS, COLLECTIONS, AND PURCHASES, including a series illustrative of the metalliferous regions of the Upper Peninsula, collected by Professor Winchell, and an interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, presented by the late General Custer, U. S. A.

6. The ROMINGER DEPOSIT, which has more than doubled the value of the geological illustrations available for study and investigation. It embraces (1) the types of all Dr. Rominger's original descriptions of palæozoic corals as contained in the Geological Report of Michigan, volume iii.—not alone the specimens figured, but numerous specimens of each species, which are not duplicates, but illustrations of different characters and varieties; (2) an enormous collection of *Stromatoporoids*—probably the largest and finest in the world; (3) a similar collection of *Bryozoa*; (4) palæozoic fossils belonging to all the other classes; (5) European fossils of all classes and ages in large number—the sponges forming, with the American species, a collection of extraordinary interest. All these specimens exist in a state of beautiful and very unusual perfection. It is impossible at present to form numerical estimates on the magnitude of the collection, but a special statement will be made out as early as practicable.

The entire Geological Cabinet is estimated to contain, aside from the Rominger Deposit, about 14,000 distinct entries, 41,000 specimens.

III. The ZOÖLOGICAL COLLECTIONS are very large, comprising about 110,000 specimens under about 23,250 entries. There is a full series illustrative of the fauna of Michigan and other northern and western States. The animals of the Pacific coast are well represented in the collection made by Lieutenant Trowbridge, and large additions from foreign countries have been made through the medium of the Smithsonian Institution.

The BEAL-STEERE ZOÖLOGICAL COLLECTION, made by Professor Steere in the years 1870-76, comprises about 25,000 insects, 1,500 shells, 8,000 birds, and numerous representatives of other groups; total, about 10,000 entries, 60,000 specimens.

IV. The BOTANICAL COLLECTION contains, in addition to Michigan plants collected by the public surveys, several valuable herbaria and sets of plants that have been presented to the University from time to time.

Among these, some of the most important are the HOUGHTON HERBARIUM, the SAGER HERBARIUM, the AMES HERBARIUM, the HARRINGTON COLLECTION, the BEAL-STEERE BOTANICAL COLLECTION, the ADAMS-JEWETT COLLECTION, and the GARRIGUES COLLECTION, all of which have been described in Calendars of previous years.

Among the more recent acquisitions are a set of native woods of the United States, collected and presented to the University by Professor C. S. Sargent, Director of the Arnold Arboretum of Harvard University; a set of 1,700 species of North American fungi, presented by Joseph B. Whittier, Esq., of East Saginaw; and a set of specimens illustrating the flora of the Lake Superior region, presented by Frank A. Wood, Esq.

The whole Botanical Cabinet contains about 70,000 specimens, representing 10,000 species, under 20,000 entries.

The collections in Natural History are estimated to contain about 255,000 specimens, under 60,000 entries.

II. INDUSTRIAL COLLECTIONS.

The collections illustrative of the materials, processes, and products of the industrial arts and of agriculture have recently received a large and valuable addition. In 1885 the Chinese Government presented to the University the Exhibit which it sent to the New Orleans Exposition. The whole collection, numbering several thousand specimens, is now on exhibition in a room set apart for its reception in the museum building. It illustrates with special fulness the varieties of Chinese cotton and the Chinese processes of manufacturing cotton and the finished products of cotton and also of silk. There are many articles showing the skill of the Chinese in working in wood, in ivory, in embroidery, in porcelain, and in painting on glass and on silk.

The nucleus of an industrial museum has long existed in the botanical and zoölogical cabinets, the cabinet of economical geology, a collection of the seeds of cereals and other field and garden crops, and an interesting collection of textile fibres and various substitutes for cotton. The University is desirous of enlarging these collections.

III. ARCHÆOLOGY AND ETHNOLOGY.

This department contains many articles of domestic and warlike use among the North American Indians and the Islanders of the South Pacific, numerous remains of the ancient Peruvians, and many specimens of clothing, art, etc., of the Amazonian Indians, modern Peruvians, Formosans, and natives of the East Indies and Alaska. The Chinese Exhibit above referred to contains a large number of articles which belong to the ethnological collection.

IV. THE FINE ARTS AND HISTORY.

The works of art belonging to the University are on exhibition in the galleries provided for them in the library building, and a printed catalogue has been prepared by Professor Frieze. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of the most valuable ancient statues and busts, such as the Apollo Belvedere, the Laocoön, the Sophocles, etc.; a gallery of more than two hundred reductions and models in terra cotta and other materials; the statues of Nydia and of Ruth Gleaning, by Randolph Rogers; copies of modern statues, busts, and reliefs; a gallery of engravings and photographic views, illustrating especially the architectural and sculptural remains of ancient Italy and Greece; a small collection of engraved copies of the great masterpieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, and the GOVERNOR BAGLEY COLLECTION,—the former illustrative of ancient, mediæval, and modern European history, the latter designed to embrace all the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. A. E. Richards.

The late HENRY C. LEWIS, Esq., of Coldwater, Mich., by his will bequeathed to the University his valuable collection of works of art, comprising about six hundred and fifty paintings and some forty pieces of statuary. The collection remains for the present at Coldwater, but will ultimately be transferred to the University Gallery.

The ROGERS GALLERY, comprising the entire collection of the original casts of the works of Randolph Rogers, more than a hundred in number, has been given by that distinguished sculptor to the State of Michigan for the University Museum. About one-half of this collection has already been received and arranged in the Art Museum.

V. ANATOMY AND MATERIA MEDICA.

This museum is used more especially in connection with the instruction given in medicine, and a fuller description of it will be found in the chapter on the Department of Medicine and Surgery.

THE LABORATORIES.

In the several Laboratories of the University opportunities are provided for practical instruction in Physics, Chemistry, Geology, Zoölogy, Botany, Physiology, Histology, Hygiene, Engineering, and Dentistry.

I. PHYSICAL LABORATORY.

The course of instruction in the Physical Laboratory is intended to

aid the student in acquiring skill in the use of physical apparatus, confidence in his ability to determine for himself well-known constants of nature, and that intimate knowledge of the principles of physics which can be obtained neither from text-books nor lectures.

Quite an extensive collection of apparatus is already provided for lecture experiments, for mechanical measurements, and for quantitative work in sound, light, and electricity. Many new electrical instruments have already been ordered from the best European makers.

The new Physical Laboratory will be ready for use in October, 1888. Its extreme dimensions are 115 by 72 feet, and it contains about 11,000 square feet of floor space, exclusive of the second story, which is devoted to hygiene. The basement story of eleven feet, and with floor two feet below grade, contains ten rooms, devoted chiefly to electrical work, with provision for the subjects of light and heat. In the first story are the lecture-room, the apparatus-room, the general physical laboratory, a mercury-room, a balance-room, and two private rooms. Stability is secured by specially strong floors, by slate tables resting on stone corbels built into the walls, and by independent piers. The building, when completed, will be supplied with gas, water, steam for heating and for power, and with appliances for the production, storage, and measurement of electricity on a commercial scale, with special reference to the needs of students in engineering. The courses in physics are open to all students in the Department of Literature, Science, and the Arts.

II. CHEMICAL LABORATORY.

In this Laboratory, facilities are provided for systematic instruction in laboratory methods of chemical study, including general chemistry, analytical and applied chemistry, organic chemistry, physiological chemistry, pharmacy, metallurgy, and assaying, and favorable opportunities are offered for original research.

The laboratory building is so arranged as to provide room for ten distinct branches of chemical work within the college year, in addition to the lecture-rooms, balance-rooms, instructors' rooms, and store-rooms. Two hundred and sixty-two students can be provided with tables for work at the same time. The Laboratory is open to all students of the University, and is regularly used by all departments except the Department of Law. The Laboratory is also open to any person who wishes to pursue special studies therein, provided he comply with the conditions for admission to that department of the University to which the desired special studies properly belong.

In all these courses of instruction there are recitations and lectures in the class-rooms, giving direction daily to the student at his table, and demanding constant study of the work undertaken. This method of teaching makes it indispensable that the student begin with a class. The Laboratory is open to students each week day of the college year.

III. GEOLOGICAL, ZOOLOGICAL, AND BOTANICAL LABORATORIES.

Opportunity for practical work in Geology, Zoölogy, and Botany is provided in rooms set apart for this use in the museum building, and in the north wing of the main building. The rooms are furnished with microscopes, photographic instruments, cutting and polishing lathes, and other apparatus for the preparation of specimens. Special encouragement and assistance are given to students wishing to carry on original investigations.

IV. MICROSCOPICAL LABORATORY.

This Laboratory is used principally by students of the Department of Literature, Science, and the Arts, and of the School of Pharmacy. There is room for the accommodation of forty students working at the same time. Forty compound microscopes, various pieces of other apparatus, such as section-cutters, turn-tables, and balances, two hundred typical specimens of crude drugs, a cabinet of over one thousand mounted sections, microchemical reagents, and the usual conveniences of gas and water, constitute a part of the outfit.

Practical instruction is given in the study of vegetable histology, in pharmacology, and in the detection with the microscope of adulterations of food and drugs. Each student is assigned a separate table and microscope, and is required to prepare his own sections, and to draw, measure, and describe the objects examined.

V. HISTOLOGICAL LABORATORY.

This Laboratory is supplied with between twenty and thirty superior microscopes of American manufacture, besides two imported from Europe, and with complete apparatus for use in microscopical investigations. The Laboratory is regularly used by students of all departments of the University except the Department of Law. Each student is given a course of fifteen lessons. An advanced course is also offered, including original investigations and the more complete study of normal and pathological histology. The student thus becomes familiar with the manipulation of microscopes, and studies the more important tissues of the body, and the methods employed in preparing and mounting specimens. During the last college year nearly three hundred students availed themselves of the opportunities for study here offered.

VI. ENGINEERING LABORATORY.

The increasing demand for practical instruction in the engineering departments has made it necessary again to extend the facilities of this Laboratory. The new building, completed in 1886, has been enlarged by the

addition of two wings, which nearly double its former capacity. The Laboratory now contains about 20,000 square feet of floor space.

The Mechanical Laboratory, 40 by 80 feet, is devoted to experimental work in connection with the testing of engines, boilers, pumps, injectors, belting, toothed and friction gearing, and lubricants; and to such original work as can be undertaken with advantage. Original work bearing on subjects for theses is especially encouraged. Machines for testing building material will also be provided. The work also extends to the testing of engines, boilers, and water-wheels of neighboring mills and electric light plants. The Knowles pumping engines at the city water works have been fitted up by the company with especial reference to the convenience of engineering students in making tests.

The Iron Room, or Machine Shop, and the Wood Room and Pattern Shop, each 40 by 80 feet, contain the tools and apparatus usually found in first-class establishments. The Wood Room contains benches for twenty students. The Pattern Loft, 40 by 80 feet, contains a fine collection of patterns made by students.

The Forge Shop, 30 by 40 feet, is fitted up with twelve forges, built by students in the laboratory shops. The blast is supplied by a No. 4 Sturtevant pressure blower, and the smoke is cleared away by a No. 31 exhaust fan.

The Foundry, 30 by 40 feet, contains an eighteen-inch cupola and brass furnaces, and is supplied with blast by a No. 3 Sturtevant pressure blower.

The central wing is 32 by 54 feet. The first floor contains a large, well-ventilated wash room with closets and other conveniences; an engine-room with a fifty-horse power Reynolds-Corliss engine; and superintendent's office. The second floor contains a large, well-lighted drawing-room, and a blue-print room. The basement and attic are devoted to storage purposes.

In the tower, at an elevation of seventy feet, there is a water tank, of one hundred barrels capacity, that can be utilized for experimental work in hydraulics.

New machinery is added to each shop from time to time so that engineering students and others desiring instruction and practice in the use of tools for working in wood and metal may be properly accommodated, and at the same time have opportunity to become familiar with the more common materials and forms of construction used in engineering structures, buildings, and machinery. In all shop-work an effort is made to follow the practice of the best shops. Several of the machines in use have been designed and built by the students themselves.

In the Machine Shop and the Foundry, Mr. John M. Smoots and Mr. Robert Winslow are employed as foremen, and they also assist in the work of instruction.

VII. PHYSIOLOGICAL LABORATORY.

The apartments which have recently been provided for this Laboratory offer unsurpassed facilities for practical work in physiology, whether of class instruction or original investigation. A large and well-lighted room is appropriated chiefly to the use of undergraduate students who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of the special senses, muscular contraction, nerve, reflex action, circulation, and respiration. A smaller room is devoted to advanced work and original investigation. Conveniently situated are an apparatus-room, a dark chamber for optical experiments, an incubation closet, and a large work shop containing machinists' and carpenters' appliances. The instrumental equipment of this Laboratory is unusually complete.

VIII. HYGIENIC LABORATORY.

The building, a part of which is to be occupied by this Laboratory, is now in course of erection and will be ready for occupancy by October, 1888. There will be a large room for general work in hygiene, a lecture-room, a microscopical room, separate rooms fitted especially for gas analysis, water analysis, and bacteriological work, and three private rooms for original research. There will also be a disinfecting chamber and a cold chamber. The Laboratory will be furnished with all necessary chemical, optical, and bacteriological apparatus. A full set of Koch's bacteriological apparatus has already been obtained. The chief purpose of this Laboratory will be to furnish proper facilities to those who are competent to carry on original investigations in hygiene, and it will be open to any such person, who desires to pursue special lines of investigation, provided he complies with the requirements for admission to the literary or the medical department of the University.

IX. DENTAL LABORATORY.

This Laboratory has been fitted up especially for students in the College of Dental Surgery. It contains eight charcoal and coke furnaces; also, sand tables, rolling-mills, and other appliances for the various manipulations of prosthetic dentistry, such as the construction of artificial dentures in gold, continuous gum, silver, aluminium, and other bases; appliances for the regulation of teeth, the mechanical treatment of oral deformities, and the construction of instruments. The Laboratory has accommodations for fifty students at a time.

THE HOSPITALS.

During the past few years the facilities for clinical instruction in the two medical schools connected with the University

have been largely increased. By the liberality of successive legislatures, aided by contributions from the city of Ann Arbor, ample hospital accommodations have been provided. The University Hospital is under the direction of the Faculty of the Department of Medicine and Surgery; the Homœopathic Hospital is connected with the Homœopathic Medical College. Further information in regard to the Hospitals is given in connection with the descriptions of the medical schools.

FEES AND EXPENSES.

MATRICULATION FEE.—Every student before entering any department of the University is required to pay a matriculation fee. This fee, which for citizens of Michigan, is ten dollars, and, for those who come from any other State or country, twenty-five dollars, is paid but once, and entitles the student to the privileges of permanent membership in the University.

ANNUAL FEE.—In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses. This fee is paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fee as undergraduates. The annual fee in the several departments of the University is as follows:

Department of Literature, Science, and the Arts: for Michigan students, twenty dollars; for all others, thirty dollars.

Department of Medicine and Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Department of Law: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

School of Pharmacy: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Homœopathic Medical College: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

College of Dental Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

The matriculation fee and the annual fee must be paid at the beginning of the college year. A By-Law of the Board of Regents provides that no student or graduate shall be allowed

to enjoy the privileges of the University until he has paid all fees that are due.

LABORATORY EXPENSES.—Students who pursue laboratory courses of study are also required to pay for the materials and apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from one dollar to twenty dollars. The laboratory expenses of students will vary with their prudence and economy. Experience has shown that in the Chemical Laboratory the average expense for all courses is about one dollar and twenty cents a week.

DIPLOMA FEE.—The fee for the diploma given on graduation is ten dollars, and the By-Laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for diploma.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office. The annual expenses of students, including clothing and incidentals, are, on the average, about three hundred and seventy dollars. The University does not undertake to furnish manual labor to students; yet a few find opportunities in the city for remunerative labor.

RELATION OF STUDENTS TO THE CITY GOVERNMENT.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

DEPARTMENT OF Literature, Science, and the Arts.

The Department of Literature, Science, and the Arts owes its name to a provision in the legislative act by which the University was organized in the year 1837. In general terms, this department represents the collegiate and technological sides of university work, as distinguished from the work of the professional schools in medicine, law, pharmacy, and dentistry. It includes also the School of Political Science.

The courses of instruction are arranged to meet the wants not only of such as are fitted to take up a systematic course of study in the classics, or in science, but also for those whose preparatory studies have not included any ancient or foreign language. Special students, who wish to pursue miscellaneous studies, are admitted on conditions stated beyond.

The academic year extends from the first day of October to the Thursday following the last Wednesday in June.

In what follows, the work of this department is described under these heads: Requirements for Admission, Courses of Instruction, Requirements for Graduation, Further Description of Courses in Technological and Professional Studies, the School of Political Science, Rules and Regulations of the Department, Fees and Expenses.

I. REQUIREMENTS FOR ADMISSION.

Candidates for admission must be at least sixteen years of age, and must present satisfactory evidence of good moral character. They must be provided with credentials from their last instructor, or from the last institution with which they have

been connected. These credentials must be presented to the President at his office, before the candidate can enter upon the examination.

Admission of Candidates for a Degree.

[For Admission to Advanced Standing, see page 35.]

[For Admission of Students not Candidates for a Degree, see page 36.]

Students who desire to become candidates for a degree must, unless admitted on diploma,* pass examinations as follows:

I. FOR THE DEGREE OF BACHELOR OF ARTS.

Candidates will be examined in the following subjects.

1. ENGLISH LANGUAGE, COMPOSITION, AND RHETORIC.—The examination will be as follows:

a. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

b. An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing. The subjects for 1888 will be taken from the following works, with the substance of which,—the plots, incidents, characters, etc.,—it is expected that the student will by careful reading thoroughly familiarize himself:—Shakespeare's *Midsummer Night's Dream*; Lowell's *Biglow Papers*; Thackeray's *The Newcomes*. The subjects for 1889 will be taken from Shakespeare's *Twelfth Night*; Thackeray's *Henry Esmond*; Hawthorne's *Mosses from an Old Manse*. Equivalents of these will, of course, be accepted.

For securing the proper preparation, the following course is recommended: 1. A few lessons and constant practice in the proper use of the *Unabridged Dictionaries*. 2. A review of the elements of *English Grammar* during the last years of the preparatory course. 3. Daily recitations for at least one term in some such work as D. J. Hill's *Elements of Rhetoric and Composition*, or A. S. Hill's *Principles of Rhetoric*. 4. A careful reading of one of Shakespeare's plays, in an annotated edition, as Hudson's, Rolfe's, Meiklejohn's, or one of the Clarendon Press series. 5. Weekly exercises in original composition, for at least two years.

A large proportion of those who seek admission to the University are found to be very deficient in their preparation in English. It is on every account desirable that such deficiency be removed as far and as fast as possible, and that the requirements in English for admission to the University be enlarged.

* See page 37.

2. **GEOGRAPHY.**—General facts of Physical Geography; the Political Geography of Europe and of the United States; Ancient Geography, particularly that of Italy, Greece, and Asia Minor.

3. **HISTORY.**—In Grecian History, the first three books of Smith's History of Greece, exclusive of the chapters on Literature and Art; Leighton's History of Rome, fifty-four chapters, to the accession of Augustus, or an equivalent; Higginson's or Johnston's History of the United States, as far as the close of the Revolutionary War, or an equivalent.

4. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominative Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, Ratio, Proportion, the Progressions, and an elementary knowledge of Logarithms; i. e., through Olney's Complete School Algebra, or an equivalent in other authors.

Geometry.—Plane, Solid, and Spherical Geometry; i. e., the first two parts of Olney's Geometry, or an equivalent in other authors.

N. B. High Schools whose graduates are received on diploma have for several years been required to have such graduates review Algebra and Geometry in their last preparatory year; and it is equally important that other students should do the same if they expect to succeed in the study of mathematics in the University.

5. **LATIN.**—*Grammar.*—A thorough preparation in the elements. For this purpose Harkness's, or Allen and Greenough's, Grammar, is recommended.

Prose Composition.—Jones's Exercises in Latin Prose Composition; or Harkness's Introduction to Latin Composition, from page 50 to page 166; or forty-four exercises in Arnold's Latin Prose Composition.

Reading.—Four books of Cæsar's Commentaries; six select Orations of Cicero; and the whole of the Æneid; for the last six books of the Æneid, all the Eclogues and Georgics may be substituted; for the last four, all the Eclogues; for the last two, 1,200 lines of Ovid.

The study of the first six books of the Æneid should be accompanied with the study of Prosody. In reading the last six books the principal aim should be to acquire facility in translation, and increased knowledge of the Latin vocabulary. It is supposed that the student, already familiar with the style of Vergil, will be able to read this portion of the Æneid more easily and rapidly than an equal amount in any other text-book.

The pronunciation of Latin used in the University is as follows:

VOWELS.

Long.	Short.
a as in <i>father</i> .	a as in <i>father</i> , but shorter, (not as in <i>hat</i>).
e as in <i>they</i> .	e as in <i>met</i> .
i as in <i>machine</i> .	i as in <i>pity</i> .
o as in <i>go</i> .	o as in <i>for</i> (not as in <i>cot</i>).
u as oo in <i>too</i> .	u as in <i>pull</i> , (not as in <i>but</i>).

DIPHTHONGS.

In pronouncing the diphthongs the sound of both vowels is preserved.

ae as *ay*.

eu nearly as *u* in *use*.

au as *ow* in *power*.

u in *ua*, *ue*, etc., as *w*.

oe as *oi* in *oil*.

et as in *rein*.

CONSONANTS.

c as in *can*.

s as in *sin*.

ch as *k*.

t as in *tin*.

g as in *gun*.

v either as French *ou* in *out*, or as English *v*

j as *y* in *young*.

Other consonants as in English.

Four years, if possible, should be given to the above preparatory course in Latin.

6. GREEK.—*Grammar*.—Hadley's, or Goodwin's. The etymology must be thoroughly mastered.

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents and to the general principles of syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis*.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's or White's First Lessons in Greek will be found valuable.

Two full years of daily recitation ought to be given to preparation in Greek.

II. FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Candidates will be examined in all the subjects required for the admission of candidates for the degree of Bachelor of Arts (see page 30,) excepting what is required in Greek and in Grecian History; and also in French, or in German, the same as for the degree of Bachelor of Science (see page 33).

III. FOR THE DEGREE OF BACHELOR OF SCIENCE.

Two groups of requirements for admission of candidates for the degree of Bachelor of Science are given below:—the first for students who intend to complete the requirements for graduation in General Science, in Chemistry, or in Biology, as given on subsequent pages; the second for students who intend to pursue courses in Civil, Mechanical, or Mining Engineering.

I. FOR THE COURSE IN GENERAL SCIENCE, IN CHEMISTRY, OR IN BIOLOGY.

Candidates will be examined in the following subjects:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 30).

2. HISTORY.—Higginson's or Johnston's History of the United States,

as far as the close of the Revolutionary War; and also Freeman's General Sketch of European History, or Swinton's Outlines; or equivalents.

3. **FRENCH, GERMAN, AND LATIN.**—Candidates may offer either French and German; French and Latin; or German and Latin;—two of these three languages being required. The requirements in each are as follows:

French.—The whole subject of French Grammar. The candidate will be expected to be thoroughly familiar with the formation and use of French verbs, to read at sight easy French, and to translate correctly into French simple English sentences. Two years ought to be given to this study, the first year being spent on the grammar, and the second devoted to reading good modern French, accompanied by grammatical analysis and exercises in writing. Hennequin's French text-books are especially recommended; preparation in Fasquelle or Otto will be accepted.

German.—The whole subject of German Grammar. The candidate will be expected to read easy German at sight, and to translate simple sentences from English into German. To this end he should have devoted two years to the study; one year to the grammar, reader, and the writing of exercises, and a second year to the reading of complete works of literary art. As a text for the second year's study, works in dramatic form, and especially the classical plays of Schiller, are recommended.

Latin.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book; four books of Cæsar's Commentaries, and one of Cicero's Orations. It is expected that about two years will be given to preparation in Latin.

4. **NATURAL PHILOSOPHY.**—An amount represented by one year of study, with experimental illustrations. Gage's Elements of Physics, or Avery's Natural Philosophy, is recommended as a text-book.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class Book of Botany; also, an analysis and written descriptions of fifty species of Phanerogams.

6. **CHEMISTRY, GEOLOGY, ZOOLOGY, AND PHYSIOLOGY.**—The candidate may offer any one of these subjects. The requirements, intended to cover a half year's work in each subject, are as follows:

Chemistry.—Nichols's Abridgment of Eliot and Storer's Manual, Shepard's Chemistry, or an equivalent.

Geology.—Candidates who offer themselves in Geology must be well acquainted with the elements of lithological, dynamical, and historical geology, as presented in Winchell's "Geological Studies," or some other good work. Especial stress is laid on familiarity with a dozen or two of the more common species of rocks and their included minerals, on the tables of classification of geological formations, on the general nature of the succession of organic forms, and on the doctrines of sedimentation, erosion, upheaval, and subsidence.

This preparation is intended to furnish some such fitness for more advanced study as is demanded in the departments of mathematics and languages. It is the equivalent of Course 1 in the University. Experience proves, however, that these points are not well understood. Most students presenting themselves for examination hitherto, have failed in thoroughness, readiness, and freshness of knowledge. Candidates are expressly notified that a few week's indifferent instruction, two, or three, or four years previously, without use of specimens, and without any field observation, can never supply that clear and ready acquaintance with the subject which is requisite for more advanced work in the University. Still less can a hasty reading up for examination, in the lack of previous thorough study, answer the requirement.

It is understood that Geology is not generally taught in the preparatory schools especially of Michigan, in such a way as to secure the requisite preparation. Candidates, therefore, who apply without due preparation, can enter on condition, and supply the deficiency by taking Course 1 or 2. But no "credit" will be given a student passing examination in Course 1 or 2, if a candidate for a degree requiring such study as preparatory for admission. Also, if any candidate for a degree *not* requiring Geology as a preparatory study, subsequently becomes, after having secured his "credits" in Course 1 or 2, a candidate for a degree *requiring* Geology as a preparatory study, then the credits gained in Geology while candidate for the former degree will be cancelled. Otherwise, the latter degree would not represent the required collegiate study *plus* the prescribed preparation.

Candidates sustaining the required preparatory examination in Geology will be fitted to take Course 3 or 9 in the first semester, or Courses 5 and 6 in the second semester.

Zoölogy.—Packard's *Zoölogy*, or Nicholson's *Manual of Zoölogy*.

Physiology.—Martin's *The Human Body*.

II. FOR THE COURSES IN ENGINEERING.

Candidates for a degree in any of the courses in engineering will be examined in the following subjects:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 30).
2. HISTORY, AND NATURAL PHILOSOPHY.—In both, the same as for the Course in General Science (see page 32).
3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see below).
4. CHEMISTRY, GEOLOGY, ZOÖLOGY, AND PHYSIOLOGY.—In any *two* of these subjects (see page 33).

IV. FOR THE DEGREE OF BACHELOR OF LETTERS.

Candidates will be examined in the following subjects:

1. ENGLISH LANGUAGE.—The same as for the degree of Bachelor of Arts. Inasmuch as no foreign language is required in preparation for this Course, it will be necessary, in order to secure a corresponding grade of attainments, to give more time to the study of the English language than is required in preparation for the other Courses. It is expected that the preparatory schools will devote at least two years of daily recitation to

Word-Analysis, Sentence-Analysis, Composition, and the Elements of Rhetoric.

2. **ENGLISH LITERATURE.**—Daily recitations for at last one year will be requisite. Stopford A. Brooke's Primer, or any one of the Manuals, may be used for an outline of the subject. As much time as practicable should be given to the careful reading and study of representative authors in each period. Candidates who have devoted special time to the subject, may apply for advanced standing in English Literature.

3. **GEOGRAPHY AND MATHEMATICS.**—In both, the same as for the degree of Bachelor of Arts (see page 30).

4. **NATURAL PHILOSOPHY AND BOTANY.**—In both, the same as for the degree of Bachelor of Science (see page 33).

5. **CHEMISTRY, GEOLOGY, ZOOLOGY, AND PHYSIOLOGY.**—In any one of these, the same as for the degree of Bachelor of Science (see page 33).

6. **HISTORY.**—The same as for the degree of Bachelor of Science, and, in addition, Gardiner's, Montgomery's, or Thompson's History of England.

7. **CIVIL GOVERNMENT.**—Martin's.

Students will be examined on subjects rather than on specified text-books. Candidates who have not pursued the exact course marked out above will be allowed to present other subjects as equivalents, provided they have the preparation necessary to enter upon the studies required for the degree of Bachelor of Letters, as those studies are taught in the University.

Admission to Advanced Standing.

1. Candidates for advanced standing who do not come from some other university or college will be examined in the studies prescribed for admission, and also in such undergraduate studies as they may ask to be credited with in advance.

2. Students who have completed at least one year's college work in an approved college, and who bring explicit and official certificates describing their courses of study and scholarship, and testifying to their good character, will be admitted without examination, except such as may be necessary in order to determine what credit they are to receive for work done in the college from which they have come and what courses of study they may profitably pursue here. Students coming from colleges whose requirements for admission are substantially equivalent to those of this Department may thus expect to be able to go on with their work without loss of standing.

3. All students who wish to obtain advance credit for work completed prior to admission to this Department, should make

application to the President at the time of matriculation, or as soon thereafter as practicable, and should secure such credits within one year from the date of matriculation. After a student's credit has once been adjusted on this account, it cannot be reopened without special vote of the Faculty.

Admission of Students not Candidates for a Degree.

Students who desire to pursue studies in this Department, and do not desire to become candidates for a degree, will be admitted on the following conditions:

1. All persons under twenty-one years of age must pass the entrance examinations required of candidates for some degree, as described on previous pages.
2. Persons over twenty-one years of age must show that they have a good knowledge of English and are otherwise prepared to pursue profitably the studies they may desire to take up.
3. Should a student who enters under the preceding provision (2), subsequently become a candidate for graduation, he must pass all the examinations for admission, required of such a candidate, at least one year previous to the time when he proposes to graduate; and in case he wishes to obtain credit for any work completed prior to his admission to this Department, he must make previous application to the President and secure his credit at the time of passing his admission examinations.

Times of Examinations.

An examination for admission to the Department of Literature, Science, and the Arts, will take place on Saturday and Monday, June 23 and 25, 1888; and another beginning on Monday, September 24, and continuing through the Tuesday, Wednesday, Thursday, and Friday following. The examinations will begin at 9 o'clock a. m. of each day. Candidates may take their examination at either of these times, or may take a part in June, and a part in September. In either case it is particularly desired that they present themselves on the first day of the examination.

Examinations for admission will also be held at Chicago and Dubuque, and possibly at some other western cities, on June 26 and 27. The place and the hours will be announced in the newspapers of those cities.

Admission on Diploma.

The right to admission on diploma, which was formerly limited to students of schools in Michigan, is now extended to students of schools in other States.

On request of the School Board in charge of any school, the Faculty will designate a committee to visit the school and report upon its condition. Usually this committee will consist of members of the Faculty; but whenever, owing to the great distance of a school from Ann Arbor or to some other cause, this is found impracticable, other persons may be designated who under the direction of the Faculty may perform the work of inspection.

If the Faculty shall be satisfied from the report of their committee that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission of candidates for any one or more of our degrees, then the graduates from *the approved preparatory course or courses* will be admitted to the University without further examination, and permitted to enter upon such undergraduate work as the preparatory studies contemplated. They must present to the President, within a year and three months after their graduation, the diplomas of their School Board, certifying that they have sustained their examinations in all the studies prescribed for admission as candidates for some one of our degrees. They will also be required to appear at once in their places; otherwise they can be admitted only upon examination.

The schools which shall be approved shall be entitled to send their graduates on diploma for a period of three years (inclusive of the year of visitation) without further inspection, provided that the Faculty are satisfied that within this period no important changes affecting the course of study and the efficiency of the instruction make another inspection necessary. Otherwise, the Faculty reserves the right to require a new

inspection if the relation between the school and the University is to be maintained. Should the authorities of any school at any time within this period desire that a committee of inspection visit their school, the Faculty will always grant such a request if it is practicable.

It is expected that the Superintendent of each approved school shall annually, at a date not later in the year than March first, send to the President a catalogue of the school if one is printed. If no catalogue is published, he will be expected to send a statement, giving the names of the teachers, the number of pupils, and a description of the courses of study.

A circular giving fuller details on this subject can be obtained on application to the President.*

II. COURSES OF INSTRUCTION.

The University provides a large number of courses of study in the various branches of learning, from which the student may choose his studies. The studies chosen may be pursued in any order, subject to certain regulations prescribed by the Faculty and to be found on a subsequent page. Some further particulars concerning the courses are given in a special Announcement furnished annually to students.

The courses offered are subject to change from year to year. Those offered for the year 1887-8 are as follows:

* In 1886-7 the list of schools approved as qualified to prepare students for the University was as follows:

1. For courses leading to all degrees: Ann Arbor, Bay City, Battle Creek, Coldwater, Detroit, East Saginaw, Flint, Grand Rapids, Ionia, Jackson, Manistee, Michigan Military Academy, Monroe, Pontiac, Port Huron, Ypsilanti, Benton Harbor Normal and Collegiate Institute; Decatur, Ill. High School; Granger Place School, Canandaigua, N. Y.; Ottawa, Ill., High School; Peoria, Ill., High School; St. Paul, Minn., High School.

2. For courses leading to all degrees except A. B.: Adrian, Alpena, Big Rapids, Lansing, Owosso, Saginaw.

3. For courses leading to the degrees of A. B., and Ph. B.: St. Clair; Normal University, Academic Department, Normal, Ill.

4. For courses leading to the degrees of A. B., and B. L.: Springfield, Ill., High School.

5. For courses leading to the degrees of Ph. B., and B. L.: Caro, Fenton.

6. For courses leading to the degrees of B. S., and B. L.: Hastings, Mt. Clemens.

7. For course leading to the degree of B. L.: Buchanan, Charlotte, Eaton Rapids, Howell, Raisin Valley Seminary, Vassar; Bloomington, Ill., High School.

GREEK.*

FIRST SEMESTER.

1. Lysias, and Xenophon's Symposium. *M, Tu, W, Th*, Sec. I., 10½-11½; Sec. II., 11½-12½. Professor PATTENGILL.

All students, except those who are admitted to advanced standing, will be required to pursue Course 1, before passing on to the other Courses; the latter may be taken in the order the student prefers.

2. Thucydides, Book V.; Lectures on the political history of Athens during the Peloponnesian War. *Tu, Th*, 9½-10½. Professor PATTENGILL.
3. Demosthenes; Lectures on the Greek Orators. *M, Tu, Th, F*, 4-5. Professor D'Ooge.
5. Teacher's Seminary. *F*, 11½-12½. Professor D'Ooge.
Course 5 is open only to those who have completed all the required Courses, and at least two hours of elective work in Greek.
12. Greek Seminary. Plays selected: Prometheus of Aeschylus; Antigone of Sophocles; Medea of Euripides. *W, F*, 2-4. *Fourth Course*. Professor D'Ooge.
17. Pausanias, with special reference to the topography and monuments of ancient Athens. *M, Th*, 3-4. Professor D'Ooge.
18. Reading of Inscriptions. *Twice a week. Hours arranged with instructor*. Professor D'Ooge.

SECOND SEMESTER.

6. Homer (Odyssey). *Tu, W, Th*, Sec. I., 10½-11½; Sec. II., 11½-12½. Professor PATTENGILL.
7. Sophocles (Oedipus Tyrannus); Aristophanes (Acharnians). *M, Tu, W, Th*, 2-3. Professor D'Ooge.
8. Greek Seminary. Studies in Euripides. *F*, or *S*, 9-11. *Two-fifths Course*. Professor PATTENGILL.
9. Theocritus. *M, W*, 9½-10½. Professor PATTENGILL.
10. Teachers' Seminary. *F*, 11½-12½. Professor D'Ooge.
Course 10 is a continuation of Course 5, and both are required for the Teachers' Diploma.
13. History of Greek Literature. Lectures and recitations. *F*, 4-5. Professor D'Ooge.
14. Greek Antiquities. Lectures. *M, W*, 4-5. Professor D'Ooge.
21. Plato (Apology, Crito, Protagoras). *M, Th*, 3-4. Professor D'Ooge.

*SCHOOL OF CLASSICAL STUDIES AT ATHENS.—This University, through the generosity of some of its friends, has become a contributor to the support of the American School of Classical Studies at Athens. The school affords facilities for archaeological and classical investigation and study in Greece, and graduates of the Department of Literature, Science, and the Arts of this University are entitled to all its advantages without expense for tuition. Prof. M. L. D'Ooge was Director of the School for 1886-7.

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23. Hellenistic Greek (Selections from the New Testament). *W, F*, 3-4. Professor D'OOGHE.

LATIN.

Courses 1 and 6 must precede all the rest.

FIRST SEMESTER.

1. Livy (Book XXI.); Grammar; Prose Composition. *Tu, W, F*, Sec. I., 11½-12½; Sec. II., 2-3; Sec. III., 3-4; Sec. IV., 4-5. Mr. MILLER.
2. Quintilian (Book X.); Horace (Ars Poetica); Lectures on Roman Literature, accompanied by recitations in Cruttwell's Roman Literature, and by brief analyses of authors. *Tu, W, Th, F*, Sec. I., 9½-10½; Sec. II., 10½-11½. Professor ELISHA JONES.
3. Pliny (Letters). Lectures. *Tu, Th*, 10½-11½. Professor FRIEZE.
4. Classical Antiquities and Art, with the Latin text of Pliny the Elder on Ancient Sculpture and Painting. Lectures. *Tu*, Sec. I., 4-5; *Th*, Sec. II., 4-5. Professor FRIEZE.

Course 4 can be taken only by those who have completed either the work required for some degree, or an equivalent of such work.

5. Teachers' Seminary (Æneid). *M*, 5-6. Professor FRIEZE.

Course 5 must be preceded by Courses 1, 2, 6, 8, and 9. Applicants for admission to Course 5 must be approved by the professors and instructors of the Latin department.

15. Seneca (Tragedies). Lectures. *M, W, F*, 10½-11½. Professor FRIEZE.
18. Plautus (Selected Plays). *M, W*, 11½-12½. Professor ELISHA JONES.

SECOND SEMESTER.

6. Terence (Andria, and Adelphi); Horace (Satires, and Epistles). *M, Tu, W, F*, Sec. I., 11½-12½; Sec. II., 2-3; Sec. III., 3-4; Sec. IV., 4-5. Mr. MILLER.
7. Horace (Odes, Books I.-IV.). *M, W*, 11½-12½. Professor ELISHA JONES.
8. Horace (Satires); Juvenal (Satires); Persius (Satire V.). *Tu, W, Th, F*, Sec. I., 9½-10½; Sec. II., 10½-11½. Professor ELISHA JONES.
9. Tacitus (Germania, and Agricola). Lectures. *M, W, F*, 10½-11½. Professor FRIEZE.
10. Cicero (Tusculan Disputations). Lectures. *M, W*, 11½-12½. Professor FRIEZE.
12. Teachers' Seminary (Prose Composition). *M*, 5-6. Mr. MILLER.
Course 12 must be preceded by Courses 1, 2, 6, and 8.
14. Seneca (Essays). Lectures. *Tu, Th*, 10½-11½. Professor FRIEZE.

SANSKRIT.

FIRST SEMESTER.

1. Beginners' Course. Recitations from Whitney's Sanskrit Grammar, accompanied by lectures upon the comparative phonetics of the Sanskrit, Greek, Latin, and Germanic languages. *Two-fifths Course. Hours arranged with instructor.* Mr. MILLER.

Course 1 is open to candidates for a degree in Arts, who have pursued the study of Latin and Greek in the University at least four semesters, and have also some knowledge of German.

SECOND SEMESTER.

2. Interpretation of texts contained in Lanman's Sanskrit Reader. *Two-fifths Course. Hours arranged with instructor.* Mr. MILLER.

Course 2 must be preceded by Course 1. At the wish of the class Course 2 is made a *three-fifths Course*, the additional hour being given to the reading and discussion of papers upon linguistic subjects.

MATHEMATICS.

FIRST SEMESTER.

2. Analytic Geometry and Calculus. *M, Tu, W, Th, 3-4.* Professor C. N. JONES.

Course 2 cannot be taken till after Courses 1 and 5 (or 5a) have been completed.

3. Advanced Analytic Geometry and Calculus. *Five times a week, 4-5.* Professor BEMAN.

Course 3 cannot be taken till after Course 6 or Course 16 has been completed.

5. Plane and Spherical Trigonometry; Analytic Geometry. *M, Tu, W, Th, Sec. I., 4-5. Mr. McCULLOCH. Sec. II., 5-6. Mr. ESTES.*

Course 5 takes the place of Courses 10a and 12, given in 1886-87, and is intended principally for students in Engineering.

- 5a. Plane and Spherical Trigonometry. *Three times a week. Eight sections, at hours arranged with instructors.* Mr. ESTES and Mr. McCULLOCH.

Course 5a takes the place of Courses 10 and 12, given in 1886-87.

11. Analytic Mechanics. *Five times a week, 5-6.* Professor C. N. JONES. Course 11 requires a knowledge of Integral Calculus.

13. Analytic Geometry and Calculus. *Five times a week. Sec. I., 3-4. Professor BEMAN. Sec. II., 4-5. Professor C. N. JONES.*

Course 13 cannot be taken until after Courses 1 and 5 (or 5a) have been completed.

17. Mathematical Reading. *Five times a week, 2-3.*

Course 17 is designed to give advanced students an opportunity to read standard mathematical works under the direction of the Faculty.

SECOND SEMESTER.

1. Advanced Algebra. *Four times a week. Eight sections, at hours arranged with instructors.* Mr. ESTES and Mr. McCULLOCH.
Course 1 takes the place of Courses 14 and 15, given in 1886-87.
4. Modern Higher Algebra, including the elements of Determinants.
Tu, Th, 11½-12½. Professor C. N. JONES.
Course 4 cannot be taken until after Courses 1 and 5a have been completed.
6. Analytic Geometry and Calculus, continuation of Course 2. *M, Tu, W, Th, 3-4.* Professor C. N. JONES.
7. Differential Equations. *Tu, Th, 2-3.* Professor BEMAN.
Course 7 cannot be taken till after Course 6 or Course 16 has been completed.
9. Quaternions. *Tu, W, Th, 4-5.* Professor BEMAN.
Course 9 is an advanced Course, open only to those who receive special permission from the Professor in charge.
16. Analytic Geometry and Calculus, continuation of Course 13. *Five times a week.* Sec. I., 3-4. Professor BEMAN. Sec. II., 4-5. Professor C. N. JONES.
17. Mathematical Reading. *Five times a week. 2-3.*
See note to Course 17 in first semester.

FRENCH.

FIRST SEMESTER.

1. Beginning French. *M, W, Th, F, Sec. I., 8¼-9¼.* Mr. de PONT.
Sec. II., 9½-10½. McClARY. Sec. III., 10½-11½. Mr. HENNEQUIN. Sec. IV., 11½-12½. Mr. CLARY.
2. Idiomatic Analysis. *M, Th, Sec. I., 9½-10½.* Mr. de PONT. Sec. II., 10½-11½ (Hennequin's Lessons in Idiomatic French). Mr. HENNEQUIN.
Course 2 is conducted mostly in French, and is intended for those who desire practice in colloquial French.
3. French Classic Dramas. *M, W, F, 11½-12½.* Professor WALTER.
Course 3 is open to all candidates for the degree of A.B., who have passed Courses 1 and 5, and to such others as receive special permission from the Professor in charge.
10. Corneille (Le Cid); Victor Hugo (Ruy Blas); Comparative Study of the Classic and Romantic Schools. *W, F, 10½-11½.* Mr. HENNEQUIN.
Course 10 is conducted in English.
11. Composition and Translation from English into French. *W, F, 9½-10½.* Mr. de PONT.
12. Seminary. Critical, literary, and historical study of authors by com-

position and conversation (Allais' Method). *M, Th*, 10½-11½.

Mr. de PONT.

Course 12 must be preceded by Course 13.

13. LaFontaine (Fables Choiesies). Advanced practice in conversation and analysis. *W, F*, 10½-11½. Mr. de PONT.

Course 13 must be preceded by Courses 2, 11, and 6, 10, or 14.

SECOND SEMESTER.

4. Scientific Reading. *M, W, Th, F*, 2-3. Mr. de PONT.

Course 4 is intended especially for engineering and scientific students.

5. French Plays and Modern Prose; Grammatical Analysis. *M, W, Th, F*, Sec. I., 8¼-9¼; Sec. II., 9½-10½. Mr. de PONT. Sec. III., 11½-12½. Mr. HENNEQUIN. Sec. IV., 11½-12½. Mr. CLARY.

6. Victor Hugo's *Hernani* and Chateaubriand's *Attala* (critical analysis). *M, Th*, 10½-11½. Mr. HENNEQUIN.

7. Montaigne. *M, W, F*, 11½-12½. Professor WALTER.

The requirements for admission to Course 7 are the same as to Course 3.

8. The Drama of the Romantic School. Lectures. *W, F*, 10½-11½. Mr. HENNEQUIN.

Course 8 must be preceded by Courses 1, 2, and 5; and it is recommended that it be preceded also by Course 6 or by Course 10. Students in Course 8 are required to read certain specified works outside the classroom.

9. Teachers' Course. *M, Th*, 9½-10½. Mr. HENNEQUIN.

Course 9 is open only to members of the graduating class who have completed Courses 1, 2, 5, 11, and one other three-fifths Course.

14. Lamartine (Lyric Poetry). *W, F*, 9½-10½. Mr. HENNEQUIN.

15. Seminary (Théâtre de Voltaire). *M, Th*, 3-5. Mr. de PONT.

Course 15 must be preceded by Courses 2, 3, 6, 12, and 13.

16. Rousseau and Montesquieu. *Contrat Social* and *Esprit des Lois*. *W, F*, 10½-11½. Professor WALTER.

Course 16 is open only to those who receive special permission from the Professor in charge.

ITALIAN.

FIRST SEMESTER.

1. Cuore's Italian Grammar. I *Promessi Sposi*. *Tu, Th*, 11½-12½. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.

SECOND SEMESTER.

2. Continuation of Course 1. *Tu, Th*, 11½-12½. Professor WALTER.

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SPANISH.

FIRST SEMESTER.

1. Knapp's Spanish Grammar and Spanish Readings. *Tu, Th, 8¼-9¼.* Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.

SECOND SEMESTER.

2. Continuation of Course 1. *Tu, Th, 8¼-9¼.* Professor WALTER.

GERMAN.

FIRST SEMESTER.

1. Beginner's Course. Grammar and Reader. *Tu, W, Th, F, Sec. I., 9½-10½.* Mr. HENNEQUIN. *Sec. II., 10½-11½; Sec. III., 3-4.* Mr. CLARY.

2. Lessing's Nathan der Weise. *M, W, F, 10½-11½.* Professor WALTER.

Course 2 is open to those who have completed Courses 1 and 3.

6. Goethe's Faust (First Part). *Tu, Th, 2-3.* Professor THOMAS.

Course 6 is open to those who have completed Courses 1, 2 or 10, 3, and 5 or 12. The student is advised to let the study of Faust come as late as possible in his University course.

7. The Nibelungenlied. *W, F, 8¼-9¼.* Professor THOMAS.

10. Goethe's Tasso. *M, W, F, 2-3.* Professor THOMAS.

Course 10 is open to those who have completed Courses 1 and 3.

11. Fichte's Reden an die deutsche Nation. *Tu, Th, 10½-11½.* Professor WALTER.

17. Seminary for the Study of German Classics. *Tu, Th, 3-4.* Professor THOMAS.

Course 17 is an advanced Course, intended for students who are making a specialty of German.

18. Readings in Chemical Literature. *Once a week. Hour arranged with instructor.* Mr. NOVY.

SECOND SEMESTER.

3. German Plays. *Tu, W, Th, F, Sec. I., 9½-10½.* Mr. HENNEQUIN. *Sec. II., 10½-11½; Sec. III., 11½-12½.* Mr. CLARY.

Course 3 is a continuation of Course 1.

4. Lessing's Laokoon. *W, F, 10½-11½.* Professor THOMAS.

Course 4 is open to those who have completed two and three-fifths Full Courses in German. Those who have completed two and one-fifth Courses are admitted only upon special permission of the Professor in charge.

5. Selections in Prose from Minor German Classics. *Tu, Th, 10½-11½.* Professor WALTER.

Course 5 is open to those who have completed Courses 1 and 3.

9. Goethe's *Faust* (Second Part). *W, F, 8¼-9¼*. Professor THOMAS.

Course 9 is open to those who have completed Course 6.

12. German Lyric Poetry. Recitations from Buchheim's *Deutsche Lyrik*.

Tu, Th, 8¼-9¼. Professor THOMAS.

Course 12 is open to those who have completed two and one-fifth Full Courses in German.

13. Teachers' Course. Recitations from Gurcke's *Hauptpunkte der deutschen Sprachlehre*. Translation of English into German.

Tu, Th, 9½-10½. Professor THOMAS.

In Course 13 the German language is used as the medium of communication in the class-room. The requirements for admission are not definitely fixed. The Course is for advanced students, and more especially for those who expect to teach German. Students are admitted only upon special application.

14. Freytag's *Die Journalisten*. *W, F, 9½-10½*. Mr. CLARY.

Course 14 must be preceded by Courses 1 and 3.

16. Kluge's *Geschichte der deutschen Nationallitteratur*. Recitations, quizzes, and short lectures in German. *W, F, 11¼-12½*. Professor THOMAS.

Course 16 is for advanced students. Admission is by special application in advance.

GOTHIC.*

SECOND SEMESTER.

1. Braune's *Gotische Grammatik*, and the study of texts from *Ulfilas*.

Two-fifths Course. Hours arranged with instructor. Professor THOMAS.

Course 1 is of a purely philological character. It is devoted chiefly to the historical study of Germanic word forms. To take this Course with profit, the student must be able to read a German text-book and must have studied Latin. Knowledge of Greek will also be helpful.

ENGLISH AND RHETORIC.

FIRST SEMESTER.

1. Composition and Speeches. Each student presents two speeches. *M, W, Sec. I., 2-3; Sec. II., 3-4.* Assistant Professor GAYLEY. *Tu, Th, Sec. III., 2-3; Sec. IV., 3-4.* Mr. BURNETT.

2. Rhetoric. Lectures and text-book. Each student presents at least two essays. Additional essays are required if in any case they are deemed necessary. *Tu, F, Sec. I., 5-6; W, Sec. II., 4-5; Th, Sec. II., 5-6.* Assistant Professor GAYLEY.

*In 1888-9 and thereafter elementary courses of instruction will be offered in Modern Swedish and also in Danish-Norwegian.

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Course 2 must be preceded by Course 1, and by Course 1 or Course 3 in Philosophy.

4. English Literature; Period of Anglo-Saxon. Text-books: Sweet's Anglo-Saxon Primer and Sweet's Reader (Prose). *M, W*, Sec. I., 3-4; Sec. II., 4-5. Mr. BURNETT.
5. English Literature; Period of Early Modern English. Text-books: Morris's Prologue and Knight's Tale, and Morley and Tyler's Manual of English Literature, Part III. *Tu, Th*, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.

Course 5 must be preceded by Course 1, and it is recommended that Courses 4 and 9 be taken before Course 5.

6. English Literature; Study of Masterpieces: More's Utopia; Bacon's Essays; Milton's Areopagitica; Burke's Reflections on the French Revolution; Carlyle's Sartor Resartus; George Eliot's Silas Marner; Spenser's Faery Queen, Book I.; Shakespeare's Sonnets; Milton's Paradise Lost; Dryden's Absalom and Achitophel; Pope's Essay on Man; Wordsworth's Excursion; Tennyson's Princess. *Twice a week (once two hours; once one hour)*. *M*, Sec. I., 4-6; *Tu*, Sec. II., 4-6; *W*, Sec. III., 4-6; *Th*, Sec. IV., 4-6; *F*, Secs. I., II., III., and IV., 4-5. Professor DEMMON.

Course 6 must be preceded by Courses 2, 5, and 10.

16. Select Writers of the Fourteenth Century. *Piers Plowman* and the Songs of Laurence Minot. *S*, 9-11. Mr. BURNETT.

SECOND SEMESTER.

1. Composition and Speeches. Each student presents two speeches. *Tu, Th*, 4-5. Mr. BURNETT.
2. Rhetoric. Lectures and text-book. Each student presents two essays. Additional essays are required if in any case they are deemed necessary. *Tu, Th*, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.

See note to Course 2 in first semester.

3. Forensics. *W*, 4-6. Assistant Professor GAYLEY.

Course 3 must be preceded by Course 2.

9. English Literature; Period of Transitional English. Text-book: Morris's Specimens of Early English, Part I. *M, W*, Sec. I., 3-4; Sec. II., 4-5. Mr. BURNETT.
10. English Literature; Period of Modern English. Lectures and text-book (Morley and Tyler's Manual of English Literature, Part IV.). *M, W*, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.

Course 10 must be preceded by Course 5.

11. English Literature; Study of Shakespeare. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Richard II., the two parts of Henry IV., Henry V., Richard III., Hamlet, Macbeth, Othello, King

Lear, and Coriolanus. *Twice a week (once two hours; once one hour).* *M*, Sec. I., 9½-11½; Sec. II., 4-6; *Tu*, Sec. III., 4-6; *F*, Secs. I., II., and III., 4-5. Professor DEMMON.

Course 11 must be preceded by Course 6.

14. The History of the English Drama. Lectures. *Th*, 3-4. Professor DEMMON.

Course 14 must be preceded by Courses 5 and 10.

17. Advanced Course in Anglo-Saxon. Text-book: Sweet's Reader (Poetry). *Two-fifths Course. Hours arranged with instructor.* Mr. BURNETT.

18. American Literature Seminary. Authors studied: Irving, Poe, Hawthorne, Bryant, Longfellow, Emerson, Bayard Taylor, Whittier, Holmes, Lowell, Howells, and James. *Two-fifths Course. Hours arranged with instructor.* Professor DEMMON.

Course 18 must be preceded by Course 6. Representative works of the authors above named are studied and compared with master-pieces of British authors, and an attempt made to discover the distinctively "American" element.

19. Seminary in Rhetoric and the Principles of Literary Criticism. Reading and discussion of standard works in Rhetoric and Literary Criticism. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor GAYLEY.

Course 19 is open to students who have passed Course 2, and have taken or are taking Course 10.

20. Teachers' Course in English Grammar, critical and practical, on the basis of Whitney's Essentials of English Grammar, and H. R. Greene's English Language. *Two-fifths Course. Hours arranged with instructor.* Mr. BURNETT.

Course 20 must be preceded by Course 1.

COURSES IN ELOCUTION AND ORATORY.

In addition to the Courses above announced for the second semester, the following Courses in Elocution and Oratory, designated as English 7, 7a, 12, and 13, are given.

7. Elocution. Exercises in vocal culture, breathing, articulation, and pronunciation; position and gesture; quality and force of voice, with their applications. *M*, *W*, 10½-11½. Mr. TRUEBLOOD.
- 7a. Elocution. Exercises in vocal culture continued; pitch and time and their subdivisions. *M*, *W*, 11½-12½. Mr. TRUEBLOOD.
12. Study of Great Orators (Sources of Oratorical Power). Demosthenes, Cicero, St. Chrysostom, Bossuet, Pitt, Burke, Webster. *Tu*, *Th*, 10½-11½. Mr. TRUEBLOOD.

Course 12 must be preceded by Courses 7 and 7a, or their equivalent.

13. Reading and Study of two of Shakespeare's Plays. Plays selected:

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Julius Caesar, and Much Ado About Nothing. *M, W*, 8¼-9¼. Mr. TRUEBLOOD.

Course 13 must be preceded by Courses 7 and 7a, or their equivalent.

HISTORY.

FIRST SEMESTER.

1. Political and Constitutional History of England during the Period of Formation. Text-book. *M, W*, Sec. I., 11½-12½; Sec. II., 4-5; Sec. III., 5-6. Mr. McLAUGHLIN.
4. Historical Seminary. The Constitutional History of England. *F*, 9½-11½, or at hours arranged with instructor. Assistant Professor HUDSON.

Course 4 is open only to such as receive special permission from the Professor in charge, and it must be preceded by Courses 1, 7, and 9.

7. General History of Europe during the Sixteenth and Seventeenth Centuries. *Tu, Th*, 8¼-9¼. Assistant Professor HUDSON.
 10. Constitutional History of the United States. Text-book: Von Holst. *Tu, Th*, Sec. I., 4-5; Sec. II., 5-6. Mr. McLAUGHLIN.
- Course 10 must be preceded by Course 1 or Course 9.

16. American Constitutional Law. Text-book: Cooley. *Tu, Th*, 9½-10½. Mr. McLAUGHLIN.

Course 16 must be preceded or accompanied by Course 10.

21. The History of Europe since the Congress of Vienna. Text-book: Mueller. *M, W*, 9½-10½. Assistant Professor HUDSON.
- Course 21 must be preceded by Course 1, 7, or 9.

24. Comparative Constitutional Law. Lectures. *M, W*, 5-6. Assistant Professor HUDSON.

Course 24 is intended only for advanced students, and must be preceded by at least two Courses in History.

SECOND SEMESTER.

9. Political and Constitutional History of England during the Period of Development. Text-book. *M, W*, Sec. I., 11½-12½; Sec. II., 4-5; Sec. III., 5-6. Mr. McLAUGHLIN.
12. Historical Seminary. Constitutional History of the United States. *F*, Sec. I., 9½-11½; Sec. II., at hours arranged with instructor. Assistant Professor HUDSON.

Course 12 is open only to such as receive special permission from the Professor in charge, and it must be preceded by Courses 1, 9, and 10, and be either preceded or accompanied by Course 14.

14. Constitutional History of the United States. Text-book: Vol Holst. *Tu, Th*, Sec. I., 4-5; Sec. II., 5-6. Mr. McLAUGHLIN.

Course 14 is a continuation of Course 10, by which it must be preceded.

15. American Colonial History. Text-book. *W, F*, 3-4. Mr. McLAUGHLIN.
17. The History of the Middle Ages. Lectures, *Tu, Th*, 3-4; quiz, *F*, 3-4. Assistant Professor HUDSON.
22. The History of Europe during the Eighteenth Century. Lectures. *M, W*, 5-6. Assistant Professor HUDSON.
Course 22 must be preceded by Course 1, 7, or 9.
25. Roman Law. Lectures. *F*, 5-6. Professor ROGERS.
Course 25 is intended only for advanced students, and must be preceded by at least two Courses in History.

PHILOSOPHY.

Candidates for a degree may take either Course 1 or Course 3 as the prescribed Course in Philosophy. No elective work in this subject can be taken until the required work has been completed or, at least, begun. Students are recommended to take up Formal Logic in their second year, and Empirical Psychology in their third year of University residence.

A student wishing to take all the Courses offered in Philosophy would be advised to take them in about the following order:

- Second year, second semester, Course 3.
- Third year, first semester, Courses 1, 4, 12, 14.
- Third year, second semester, Courses 5, 6, 13.
- Fourth year, first semester, Courses 2, 7, 8, 11.
- Fourth year, second semester, Courses 9, 10, 15, 16.

FIRST SEMESTER.

1. Empirical Psychology. Text-book: Dewey's Psychology. *Tu, Th, F*, Sec. I., 8¼-9¼; *M, W, F*, Sec. II., 9½-10½. Assistant Professor DEWEY.
2. Real Logic, or the Principles of Philosophy. Lectures. *Tu, W, F*, 10½-11½. Professor MORRIS.
Course 2 must be preceded by Courses 3, 4, and 5.
4. The History of Philosophy; ancient and mediaeval. Lectures. *Tu, Th, F*, 11½-12½. Professor MORRIS.
7. Seminary (Kant's Ethics). *M*, 2-4. Assistant Professor DEWEY.
Course 7 must be preceded by Courses 4, 5, and 6.
8. Political Philosophy. Lectures. *M, W*, 11½-12½. Professor MORRIS.
Course 8 must be preceded by Course 6.
12. Experimental Psychology. Lectures. *M, W*, 8¼-9¼. Assistant Professor DEWEY.
Course 12 is open to those who have taken or are taking Course 1.

SECOND SEMESTER.

3. Formal Logic. Jevons's Lessons in Logic. *Tu, Th*, Sec. I., 8¼-9¼; Sec. II., 9½-10½; *W, F*, Sec. III., 8¼-9¼. Assistant Professor DEWEY.

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5. The History of Philosophy; modern. Lectures. *Tu, Th, F*, 11½-12½.
Professor MORRIS.
Course 5 must be preceded by Course 4 or its equivalent.
6. Ethics, historical and theoretical. Lectures. *W, F*, 10½-11½.
Professor MORRIS.
Course 6 should be preceded by Course 1.
10. The Philosophy of Herbert Spencer. Lectures. *Tu, Th*, 5-6. As-
sistant Professor DEWEY.
Course 10 can be taken only by those who have taken or are taking
Courses 5 and 13.
13. Speculative Psychology. Lectures. *W, F*, 9½-10½. Assistant Pro-
fessor DEWEY.
Course 13 must be preceded by Course 1.
16. The Philosophy of Religion. Lectures. *M, W*, 11½-12½. Professor
MORRIS.

THE SCIENCE AND THE ART OF TEACHING.

A prescribed course of reading will be required in connection with Courses 1 and 2. Either Course 1 or Course 2 is requisite to obtain a Teacher's Diploma. Students whose purpose is to prepare themselves for ordinary school-room duties, are advised to pursue Course 1; those who propose to assume the management of high schools, or of graded schools, should take Course 3 in connection with Course 1.

FIRST SEMESTER.

1. Practical: the art of teaching and governing; methods of instruction and general school-room practice; school hygiene; school law. Recitations and lectures. Text-book: Fitch's Lectures on Teaching. *Tu, W, Th, F*, 2-3. Professor PAYNE.
3. School supervision: embracing general school management, the art of grading and arranging courses of study, the conduct of institutes, etc. Recitations and lectures. Text-book: Chapters on School Supervision. *M, W, F*, 8¼-9¼. Professor PAYNE.
5. History of Education; ancient and mediaeval. Text-book: Compayré's History of Pedagogy. *Tu, W, Th*, 5-6. Professor PAYNE.

SECOND SEMESTER.

2. Theoretical and critical. Lectures. *Tu, W, Th, F*, 2-3. Professor PAYNE.
4. Seminary. Study and discussion of special topics in the history and philosophy of education. *M, W*, 8¼-9¼. Professor PAYNE.
6. The comparative study of educational systems. Lectures. *Tu, Th*, 8¼-9¼. Professor PAYNE.
7. History of Education; modern. Text-book: Compayré's History of Pedagogy. *Tu, W, Th*, 5-6. Professor PAYNE.

POLITICAL ECONOMY.

FIRST SEMESTER.

1. Principles of Political Economy. Lectures, *M, W*, 2-3; recitations, *Tu*, Sec I., 2-3; *Th*, Sec. II., 2-3; *F*, Sec. III., 2-3. Professor ADAMS.
3. Principles of the Science of Finance. Lectures. *Tu, Th*, 11½-12½. Professor ADAMS.
Course 3 must be preceded by Course 1.
6. Development of Economic Thought. *W*, 7-9 p. m. Professor ADAMS.
Course 6 consists of assigned readings with reports upon the same by students. It must be preceded by Course 1.

SECOND SEMESTER.

2. Unsettled Questions in Political Economy. Lectures. *M, W, F*, 3-4. Professor ADAMS.
Course 2 must be preceded by Course 1.
4. General Course in Political Economy. Text-book: Marshall's Economics of Industry. *Tu, Th*, 3-4. Professor ADAMS.
Course 4 is designed for students who can give one semester only to Political Economy.
5. Principles of the Science of Statistics. *W*, 11½-12½. Professor ADAMS.
7. Seminary. Financial History of the United States. *W*, 7-9 p. m. Professor ADAMS.
Course 7 must be preceded by Course 3.

SANITARY SCIENCE.

FIRST SEMESTER.

1. Sanitary Science. Lectures. *Tu, Th*, 10½-11½. Professor VAUGHAN.

INTERNATIONAL LAW.

FIRST SEMESTER.

1. Lectures on International Law. *Tu, Th*, 2-3. President ANGELL.
Course 1 is open only to those who have completed two Courses in History; Course 7 is especially recommended as one of the two.

SECOND SEMESTER.

2. History of Treaties. *Tu, Th*, 2-3. President ANGELL.
Course 2 must be preceded by Course 1.

PHYSICS.

FIRST SEMESTER.

7. Theoretical Physics. *Twice a week. Hours arranged with instructor.* Professor CARHART.

For admission to Course 7, the requirements are Courses 10 and 13, and a knowledge of Calculus.

10. Mechanics, Sound, and Light. *Five times a week, 11½-12½.*
Professor CARHART.

Course 10 is open to students who have passed an entrance examination in Physics, and to all others who may have sufficient preparation. A knowledge of Plane Trigonometry is required.

12. Advanced Physical Laboratory work. *Three afternoons a week, between 2 and 5.* Professor CARHART.

Course 12 must be preceded by Courses 3 and 13.

SECOND SEMESTER.

3. Physical Laboratory work for beginners. *Three afternoons a week, between 3 and 6.* Professor CARHART.

Course 3 must be preceded by Course 10. It is recommended that it be preceded also by Course 7.

11. Electrical units and measurements. Lectures. *Twice a week. Hours arranged with instructor.* Professor CARHART.

Course 11 must be preceded by Courses 10 and 13.

13. Heat, Electricity, and Magnetism. *Five times a week, 11½-12½.*
Professor CARHART.

Course 13 constitutes a basis for subsequent laboratory work in these topics. It must be preceded by Course 10.

GENERAL CHEMISTRY.

To students desiring a competent knowledge of General Chemistry, the following electives are suggested: first year, Course 10 in Physics, and Course 2 in General Chemistry; second year, Courses 3 and 5 in General Chemistry.

To those desiring to study Analysis, Course 2 and either Course 4 or Course 5 in General Chemistry are suggested as furnishing a good preparation for work in Applied Chemistry.

FIRST SEMESTER.

4. Laboratory Methods of Studying General Chemistry, and Electro-Chemistry. *Three times a week, two hours each exercise. Hours arranged with instructor.* Professor LANGLEY.

Courses 4 and 5 must be preceded by Course 2, or an equivalent; they make use of laboratory methods for general, as distinguished from technical, purposes.

5. The same subject as in Course 4. *Five times a week.* 5a. Teachers' Course,—the same as Course 5, *four times a week*, with the addition of one exercise each week in the art of giving experimental lectures in Chemistry. Professor LANGLEY.

Course 5a is one of the Courses which lead to a Teachers' diploma.

6. Gas Analysis. *Three times a week. Hours arranged with instructor.* Professor LANGLEY.

Course 6 must be preceded by Course 5, or its equivalent in Analytical Chemistry.

SECOND SEMESTER.

2. Experimental and general lectures, with recitations. Lectures, *M, W, F*; recitations, *Tu, Th*, 11½-12½. Professor LANGLEY.

Course 2 must be preceded by Course 10 in Physics, or an equivalent.

3. Lectures and recitations on the Kinetic Theory of Gases and on Chemical Philosophy. *Tu, Th*, 9½-10½. Professor LANGLEY.

Course 3 must be preceded by Course 2, and it is recommended that it also be preceded either by Course 4 or Course 5 in General Chemistry, or by one or more Courses in Analytical Chemistry.

ANALYTICAL CHEMISTRY AND ORGANIC CHEMISTRY.

The Laboratory work requires from two to three hours daily, between 1 and 5; or, after the Spring recess, between 1 and 6. Permission for forenoon hours is given when necessary. The hours of class-work where not specified, are arranged with the instructors.

Those entering upon the study of Analytical Chemistry for the purpose of science, irrespective of technical application, should first take Courses 1 or 3, and 5a, and if possible should obtain Course 11. In Organic Chemistry, Course 6 should be taken first, and either Course 7 or Course 15 may be taken. For Synthetic Research, Courses 6, 6a, 7, 7a, and 11 should be taken. For Commercial Analysis, Courses 6, 6a, and 15 should be taken. For Physiological Chemistry, Courses 1, 2, 5a, 8, and 8a are advised.

FIRST SEMESTER.

1. Qualitative Analysis. Recitations, *five times a week*, Sec. I., 8¼-9¼; Sec. II., 9½-10½; Laboratory work, *five times a week*. *Two Full Courses.* Assistant Professor JOHNSON.
6. Organic Chemistry. Lectures. *M, W, F*, 10½-11½. Professor PRESCOTT.

Course 6 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry, or Course 2 in General Chemistry.

EITHER FIRST OR SECOND SEMESTER.

5. Quantitative Analysis. (a), Recitation, *W*, 11½-12½; Laboratory work, *daily from October 1 to the holiday vacation; also from the Spring recess to the end of the year. One Full Course.* (a'), Laboratory work and recitations. *One and two-fifths Full Courses.* (a''), Laboratory work, recitations, and reading. *One and two-*

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fifths Full Courses. (a'''), Continuation of (a''). Professor CHEEVER.

Course 5 is open to those who have taken Course 1 or Course 3.

6a. Organic Chemistry. Laboratory work. *Twice a week.* Professor PRESCOTT.

Course 6a is open to those who have taken Course 1 or Course 3. It must also be preceded or accompanied by Course 6.

7. Organic Chemistry. Ultimate Analysis and Synthetic Preparations. Laboratory work. *Five times a week.* 7a. Continuation of Course 7, and of the same extent. Professor PRESCOTT.

Course 7 is open to those who have taken Courses 1, 5, and 6.

8. Physiological Chemistry. Lectures, *twice a week*; Laboratory work, *five times a week.* *One and two-fifths Full Courses.* 8a, Continuation of Course 8, and of the same extent. Professor VAUGHAN.

Course 8 is open to those who have taken Course 1 or Course 3.

9. Assaying Ores, wet and dry way. Laboratory work and lectures. *Every day for two months. Three-fifths Course.* Professor CHEEVER. Course 9 is open to those who have taken Courses 1 and 5.

10. Blow-pipe Analysis. Laboratory work and lectures. *Every day for six weeks. Two-fifths Course.* Professor CHEEVER.

Course 10 must be preceded by Course 1 or Course 3, and must be preceded or accompanied by a Course in Mineralogy.

11. Original Investigation. Laboratory work and reading. *Five times a week.* 11a. Continuation of Course 11, and of the same extent.

Courses 11 and 11a are conducted by different instructors, according to the nature of the investigations. They must be preceded by Courses 1 and 5, and by such other studies as the investigations shall require.

12. Assaying Ores, dry way. Laboratory work and lectures. *Every day for six weeks. Two-fifths Course.* Professor CHEEVER.

Course 12 must be preceded by Course 1 or Course 3.

16. Sanitary Examinations. Lectures, *twice a week*; Laboratory work, *five times a week.* *One and two-fifths Full Courses.* Professor VAUGHAN.

Course 16 is open to those who have taken Course 1 or Course 3.

SECOND SEMESTER.

1. Qualitative Analysis. Recitations, *five times a week, 8¼-9¼*; Laboratory work, *five times a week. Two Full Courses.* Assistant Professor JOHNSON.

2. Advanced Qualitative Analysis, continuation of Course 1, until the Spring Recess. Recitations, *five times a week, 9½-10½*; Laboratory work, *five times a week. Four-fifths Course.* Assistant Professor JOHNSON.

3. Qualitative Analysis. Recitations, *Tu, Th, 2-3*; Laboratory work,

three times a week. One Full Course. Assistant Professor JOHNSON.

13. Manufacture and Purification of Chemicals. Recitation, *once a week*; Laboratory work, *five times a week. To begin after the Spring Recess. Four-fifths Course. Assistant Professor JOHNSON.*

Course 13 is open to those who have completed Courses 1 and 2.

14. Outlines of Chemical Technology. Lectures. *Once a week. Assistant Professor JOHNSON.*

Course 14 is open to those who have taken Course 1 or Course 3.

15. Proximate Organic Analysis, including Toxicology. Laboratory work. *Five times a week. Professor PRESCOTT.*

Course 15 is open to those who have taken Courses 1 or 3, and 5a or 6.

ASTRONOMY.

The Courses in Astronomy and Meteorology should be pursued in the following order: Courses 2 and 8; Course 5; Course 9 or Course 3; Courses 1 and 4 with 10.

FIRST SEMESTER.

1. Theoretical Astronomy. *Five times a week, 4-5. Professor HARRINGTON.*

Course 1 should be preceded by Course 11 in Mathematics.

5. Modern Meteorology. *Tu, F, 5-6. Professor HARRINGTON.*

Course 5 must be preceded by an elementary Course in Physics.

EITHER FIRST OR SECOND SEMESTER.

3. Spherical and Practical Astronomy (for students in Civil Engineering). *Two-fifths Course. Hours arranged with instructor. Mr. SCHAEBERLE.*

Course 3 must be preceded by Courses 2, 3, and 6 in Mathematics.

8. Elementary Practical Course. *One-fifth Course. Hours arranged with instructor. Mr. SCHAEBERLE.*

9. Course for Time, Latitude, and Longitude. *One-fifth Course. Hours arranged with instructor. Mr. SCHAEBERLE.*

10. Advanced Practical Course. *One-fifth Course. Hours arranged with instructor. Mr. SCHAEBERLE.*

For Courses 8, 9, and 10, a general knowledge of Astronomy and some knowledge of Trigonometry are requisite.

SECOND SEMESTER.

2. General Astronomy. *M, W, F, 4-5. Professor HARRINGTON.*

Course 2 requires a knowledge of Plane Trigonometry.

4. Theoretical Astronomy. *Five times a week, 5-6. Professor HARRINGTON.*

Course 4 should be preceded by Course 11 in Mathematics.

MINERALOGY.

FIRST SEMESTER.

1. Short Course. Lectures and practice. Lectures, *M, F*, Sec. I., $9\frac{1}{2}$ - $10\frac{1}{4}$; Sec. II., $10\frac{1}{2}$ - $11\frac{1}{2}$; practice, *hours arranged with instructor*. Professor PETTEE.

For Course 1 an elementary knowledge of Chemistry is desirable.

SECOND SEMESTER.

2. Mineralogy and Lithology. *Five times a week*, $8\frac{1}{4}$ - $10\frac{1}{2}$. Professor PETTEE.

Course 2 can be taken only by those who are taking, or have taken, a Course in Analytical Chemistry.

3. Advanced Course. *Hours arranged with instructor*. Professor PETTEE.

Course 3 must be preceded by Course 1, or by Course 2.

GEOLOGY.

Course 3 or Course 5 may be taken as an advanced Course by students who have passed an entrance examination in Geology.

FIRST SEMESTER.

1. Elements of General Geology. The Earth's surface and the constitution of its crust. Erosion, sedimentation, change of level, mountain-making, geological dynamics, the history of life and the grand succession of geological events. Part I. Facts and Doctrines. *M, W*, 3-4. Professor WINCHELL.
2. Oral Exercises. Supplementary to Course 1, and parallel with it; being a review with exercises on the geological map, and in various specific geological problems. *F*, 3-4. Professor WINCHELL.

Course 2 is intended to accompany Course 1; it may be taken, however, by any person already acquainted with the elements of Geology.

3. Advanced Geology and Palæontology. Lectures, reading, and museum study. *Tu, Th*, 3-4. Professor WINCHELL.

Course 3 is intended for students who have taken Course 1, or who enter the University with thorough preparation in the elements of Geology.

4. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Five times a week*, 2-4. Professor WINCHELL.
8. Economic Geology. *Tu, Th*, 5-6. Professor PETTEE.
Course 8 must be preceded by Course 2 in Mineralogy.
8. Geology of the United States. *Tu, Th*, 4-5. Professor PETTEE.

SECOND SEMESTER.

5. Elements of General Geology. Part II. Theories. *M*, 3-4. Professor WINCHELL.

Course 5 can be taken only by those who have had Course 1, or an equivalent. See note to Course 6.

6. Oral exercises, parallel with Course 5. *F*, 3-4. Professor WINCHELL.

Course 6 is intended to accompany Course 5. Students taking either Course 5 or Course 6 without the other are held to the same examination as those taking both Courses together.

7. Paleontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Five times a week*, 2-4. Professor WINCHELL.

Course 7 is intended for students aspiring to proficiency in Geology; it must be preceded by Course 1, and also by Course 1 in General Biology and Course 1 in Zoölogy.

GENERAL BIOLOGY.

FIRST SEMESTER.

1. Elements of Biology. A study of typical species of plants and animals, with reference to structure, development, and relationship. Lectures, *M*, *W*, 8¼-9¼; Laboratory work, *forenoons*. *One Full Course*. Professor SPALDING and Assistant Professor REIGHARD.

ZOÖLOGY.

FIRST SEMESTER.

1. General Zoölogy. Lectures. *Tu*, *Th*, 8¼-9¼. *Additional hours, arranged with instructor, are spent in the study of preparations. Three-fifths Course*. Mr. WASHBURN.
4. Osteology (human and comparative). Lectures and Laboratory work. *Five times a week. Hours arranged with instructor*. Mr. WASHBURN.

Course 4 must be preceded by Course 1 in Zoölogy, or Course 1 in General Biology, or an equivalent.

6. Comparative Anatomy of Vertebrates. Recitations, *W*, *F*, 8¼-9¼; Laboratory work, *forenoons*. *One Full Course*. Assistant Professor REIGHARD.

Course 6 must be preceded by Course 1 in Zoölogy, or Course 1 in General Biology, or an equivalent.

SECOND SEMESTER.

7. Entomology (introductory). Structure and classification of insects. Lectures and Laboratory work. *Three-fifths Course. Hours arranged with instructor*. Mr. WASHBURN.

Course 7 must be preceded by Course 1 in General Biology.

8. Ornithology. Study of a type, to be followed by exercises in classification, field excursions, etc. Lectures, *W*, *F*, 9½-10½; Laboratory work, *hours arranged with instructor*. *One Full Course*. Mr. WASHBURN.

Course 8 must be preceded by Course 1 in General Biology.

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9. Dissection and Microscopic Anatomy of a typical Vertebrate. Lecture, *M*, 2-3; Laboratory work, *afternoons*. *One Full Course*. Assistant Professor REIGHARD.

Course 9 is preparatory to work in Physiology, Embryology, or Medicine.

10. Embryology. Laboratory work, lectures, and recitations. Recitations, *W, F*, 2-3; Laboratory work, *afternoons*. *One Full Course*. Assistant Professor REIGHARD.

Course 10 must be preceded by Course 6 or by Course 9.

BOTANY.

FIRST SEMESTER.

1. Cryptogamic Botany. Elementary Course. Lecture, *F*, 8¼-9¼; Laboratory work, *forenoons*. *Three-fifths Course*. Professor SPALDING.
2. Structural and Pharmaceutical Botany. Lecture, *F*, 9½-10½; Laboratory work, *M, Tu, W, Th*, *forenoons*. *One Full Course*. Mrs. STOWELL.
- 2a. Advanced Course. Microscopical Detection of Adulterations in Foods and Spices. *Twice a week*. *Hours arranged with instructor*. Mrs. STOWELL.

SECOND SEMESTER.

3. Structural Botany and Microscopy. Lecture, *F*, 10½-11½; Laboratory work, *M, Tu, W, Th*, *forenoons*. *One Full Course*. Mrs. STOWELL.
- 3a. Advanced Structural Botany and Microscopy. *Ten hours of Laboratory work and reading*. *Hours arranged with instructor*. *One Full Course*. Mrs. STOWELL.
- Course 3a must be preceded by Course 2 or Course 3.
- 3b. Comparative Vegetable Histology. *Ten hours of Laboratory work*. *Hours arranged with instructor*. *One Full Course*. Mrs. STOWELL.
- Course 3b must be preceded by Course 3.
5. Cryptogamic Botany. Advanced Course. Study of Fungi. *Five times a week*. *Hours arranged with instructor*. Professor SPALDING.
- Course 5 must be preceded by Course 1.
6. Advanced Course. Morphology and Physiology of Phanerogams. a. *Three times a week*. b. *Twice a week*. *Hours arranged with instructor*. Professor SPALDING.

Course 6 must be preceded by Course 1, or by Course 1 in General Biology.

PHYSIOLOGY.

FIRST SEMESTER.

1. Animal Physiology. Experimental lectures and recitations. Lectures, *M, W*, 11½-12½; recitation, *F*, 11½-12½. Professor SEWALL.

Course 1 must be preceded by Course 10 in Physics and by Course 2 in General Chemistry.

SECOND SEMESTER.

2. Continuation of Course 1. Experimental lectures and recitations. Lectures, *M, W*, 11¼-12¼; recitation, *F*, 11¼-12½. Professor SEWALL.

DRAWING.

FIRST SEMESTER.

1. Geometrical Drawing. *M, W*, 2-4. Assistant Professor DAVIS.
2. Typographical Drawing, Lettering, and Ornamentation. *Tu, Th*, 9¼-11¼. Professor DENISON.
3. Mechanical Drawing. *Tu, Th, F*, 2-4. Assistant Professor DAVIS.
4. Free-hand Drawing; Sketching; Pen and Ink Drawing. *M, W, F*, 9¼-12½. Professor DENISON.
9. Sketching of parts of machines. Lettering. *M, W, F*, 9½-12½. Professor DENISON.

Course 9 is given specially for students in Mechanical Engineering.

10. Continuation of Course 8. *Twice a week. Hours arranged with instructor.* Professor DENISON.
11. Free-hand drawing from the Cast. *Twice a week. Hours arranged with instructor.* Professor DENISON.

Course 11 must be preceded by Courses 4 and 7.

13. Water Color Drawing. *Three times a week. Hours arranged with instructor.* Professor DENISON.

Course 13 must be preceded by Course 8.

SECOND SEMESTER.

5. Descriptive Geometry. *M, W, F*, 8¼-10½. Assistant Professor DAVIS and Professor DENISON.

Course 5 must be preceded by Course 1.

6. Shades, Shadows, and Perspective. *M, W, F*, 9½-12½. Professor DENISON.

Course 6 must be preceded by Course 5.

7. Free-hand Drawing (advanced). *M, W, F*, 9½-12½. Professor DENISON.

8. Architectural and Water Color Drawing. *Tu, Th*, 9½-11¼. Professor DENISON.

12. Continuation of Course 11. *Twice a week. Hours arranged with instructor.* Professor DENISON.

14. Charcoal Drawing. *Three times a week. Hours arranged with instructor.* Professor DENISON.

Course 14 must be preceded by Course 7.

SURVEYING.

FIRST SEMESTER.

1. Surveying; Use of Transit and Level. *M, W, F, 8¼-12½.* Assistant Professor DAVIS.
2. Surveying with Compass; Solar Compass; U. S. Surveys. *Tu, Th, 8¼-12½.* Assistant Professor DAVIS.
Courses 1 and 2 presuppose a knowledge of Plane Trigonometry.
5. Use of Instruments. *Hours arranged with instructor. One-fifth Course.* Assistant Professor DAVIS.
Course 5 is given specially for students in Mechanical Engineering.

SECOND SEMESTER.

3. Higher Surveying; Plane Table; Sextant; Earth-work. *Five times a week. 2-6.* Assistant Professor DAVIS.
Course 3 must be preceded by Courses 1 and 2.
4. Field work. *Four weeks entire, 8-12 and 1-5.* Assistant Professor DAVIS.
Course 4 is open only to students that are, or are intending to become, candidates for a degree for a Course in Engineering.

CIVIL ENGINEERING.

FIRST SEMESTER.

1. Strength and Resistance of Materials. *M, W, 9½-10½.* Professor GREENE.
Course 1 must be preceded by Course 11 in Mathematics.
2. Engineering; Theory of Construction. *F, 9½-10½.* Professor GREENE.
Course 2 must be preceded by Course 11 in Mathematics.
- 3a. Graphical Analysis of Structures. *Tu, Th, 9½-10½.* Professor GREENE.
Course 3a requires at least a limited knowledge of Statics and must be preceded by Course 3.
4. Engineering Design. *Daily, three hours a day. One Full Course.* Professor GREENE.
Course 4 accompanies Courses 1 and 2.
5. Mechanism and Machine Drawing. *Tu, Th, 9½-11½.* Professor M. E. COOLEY and Professor DENISON.

SECOND SEMESTER.

3. Graphical Analysis of Structures. *Tu, Th, 10½-11½.* Professor GREENE.
7. Dynamics of Machinery. *Tu, Th, 11½-12½. First half of semester. One-fifth Course.* Professor M. E. COOLEY.

8. Engineering; Theory of Construction. *M, Tu, Th, F, 9½-10½.* Professor GREENE.
9. Hydraulics; Water Supply and Sewerage. *W, 9½-10½.* Professor GREENE.
10. Stereotomy. *Tu, Th, 9½-11½.* Professor DENISON.
Course 10 must be preceded by Course 5 in Drawing.

MECHANICAL ENGINEERING.

FIRST SEMESTER.

2. Shop Practice in Forging. *Tu, Th, two hours each day. Two-fifths Course.* Mr. TAYLOR.
5. Mechanism and Machine Drawing. *Tu, Th, 9½-11½, and additional time, arranged with instructors. Three-fifths Course.* Professor M. E. COOLEY and Professor DENISON.

Course 5 must be preceded by Course 5 or 5a in Mathematics, and by Courses 1 and 5 in Drawing.

7. Prime Movers; Water Wheels and Steam Engines. *Tu, Th, 10½-11½.* Professor M. E. COOLEY.

Course 7 must be preceded by Course 6.

- 7a. Thermodynamics; Hot Air and Gas Engines, Air Compressors and Refrigerating Machines. *Twice a week. Hours arranged with instructor.* Professor M. E. COOLEY.

Course 7a must be preceded by Course 6.

8. Theory of Machine Construction. *F, 11½-12½.* Professor M. E. COOLEY.

Course 8 should be accompanied by Course 1 in Civil Engineering.

9. Machine Design. *Daily, three hours a day. One Full Course.* Professor M. E. COOLEY.

Course 9 should be accompanied by Course 8.

EITHER FIRST OR SECOND SEMESTER.

1. Shop Practice in Wood Work and in Pattern Work. 1a. Continuation of the same for advanced students. *M, W, F, 9½-12½. Three-fifths Course.* Mr. TAYLOR.

In the first semester the work in Course 1 is arranged especially for students in Mechanical Engineering; in the second, for students in Civil Engineering.

4. Shop Practice in Iron Work. 4a. Continuation of the same for advanced students. *M, W, F, three hours each day, between 2 and 6. Three-fifths Course.* Mr. TAYLOR.

SECOND SEMESTER.

3. Machinery and Machine Drawing. *Tu, Th, 8¼-10½.* Professor M. E. COOLEY and Mr. TAYLOR.

Course 3 must be preceded by Courses 1 and 9 in Drawing.

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6. Dynamics of Machinery. *Tu, Th, 11½-12½.* Professor M. E. COOLEY.
Course 6 must be preceded by Course 11 in Mathematics, and by Course 10 in Physics.
10. Machine Construction and Mill Work. *M, Tu, Th, F, 9½-11½.* Professor M. E. COOLEY.
Course 10 must be preceded by Course 9.
11. Steam Engineering; Steam Generators; Steam Pumping and Hoisting Machinery; Practical work in the Laboratory. *M, W, F, 2-5.* Professor M. E. COOLEY.
Course 11 must be preceded by Courses 7 and 7a.
12. Shop Practice in Foundry Work. *Tu, Th, three hours each day, between 2 and 6. Two-fifths Course.* Mr. TAYLOR.

MINING ENGINEERING.

SECOND SEMESTER.

1. Mining. *Five times a week. Hours arranged with instructor.* Professor PETTER.

Course 1 is open only to those who are candidates for the degree of Bachelor of Science for a course in Mining Engineering.

METALLURGY.

FIRST SEMESTER.

1. Fuel and Refractory Material, Iron, Steel, Copper, and Zinc. *M, Tu, Th, 11½-12½.* Professor CHEEVER.

Course 1 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

SECOND SEMESTER.

2. Lead, Silver, Gold, Mercury, and other metals. *Twice a week. Hours arranged with instructor.* Professor CHEEVER.

Course 2 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

MUSIC.

FIRST SEMESTER.

1. Science and Practice of Choral Music. *Tu, Th, F, 5-6. Two-fifths Course.* Professor CADY.

No previous knowledge of Music is required for admission to Course 1; but, as many persons do not have the aptitude for the successful pursuit of the study, those wishing to take the Course *must first satisfy the instructor that they can do so with profit.*

2. Science of Harmony. *Tu, F, 9½-10½.* Professor CADY.

Course 2 must be preceded by Course 1 or its equivalent; and sufficient technical ability to play a common hymn tune on the piano or organ will also be required.

6. Simple Counterpoint. *M, Th, 10½-11½.* Professor Cady.
Course 6 must be preceded by Courses 2 and 4.
8. Science of Harmony. *Tu, F, 10½-11½.* Professor Cady.
Course 8 must be preceded by Courses 2 and 4.
10. Counterpoint. *M, Th, 9½-10½.* Professor Cady.

SECOND SEMESTER.

3. Science and Practice of Choral Music. *Tu, W, F, 5-6.* *Two-fifths Course.* Professor Cady.
Course 3 must be preceded by Course 1 or an equivalent.
4. Science of Harmony. *M, Th, 9½-10½.* Professor Cady.
11. Imitation. Canon. Choral Vorspiel. *Hours arranged with instructor.* Professor Cady.

BIBLIOGRAPHY.

FIRST SEMESTER.

Lectures designed to aid readers in the use of the library, and in gaining a knowledge of recent books. *M, 7½-8½ P. M., during the month of October.* Mr. R. C. DAVIS.

Attendance upon these lectures is not counted as meeting the requirements for a degree.

SECOND SEMESTER.

1. Historical, Material, and Intellectual Bibliography. Lectures. *W, 3-4.* Mr. R. C. DAVIS.

III. REQUIREMENTS FOR GRADUATION.

I. THE BACHELORS' DEGREES.

[For the Higher Degrees, see page 68].

The degree of Bachelor of Arts, Philosophy, Science, or Letters may be earned by following the credit system, or the university system. A description of the latter is given on page 66. The requirements for graduation on the credit system are as follows:

A. GRADUATION ON THE CREDIT SYSTEM.

Under the credit system, the Faculty recommend for graduation students who have completed a stated number of *Full Courses* of study, according to the requirements specified below, —a part being prescribed and a part being chosen by the student. A *Full Course* of study comprises five exercises a week during a semester, whether in recitations, laboratory work, or

lectures. It is not essential that the exercises constituting a *Full Course* shall be in one and the same branch of study. Thus, a part (two for instance) may be in Mathematics, a part (say two) in Greek, and a part (say one) in Latin, making a total of five.

The Degree of Bachelor of Arts.

To obtain the recommendation of the Faculty for the degree of Bachelor of Arts, the student must complete *twenty-four Full Courses*. The prescribed portion of this work is as follows:

In Greek; Courses 1, 3, 6, 13 and a four-fifths Course in tragedy.

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 1, 2, 5a, 6. *

In French; Courses 1, 5.

In English; Courses 1, 2.

In Philosophy; Course 1 or 3.

But after a student has completed Courses 1, 6, and 13 in Greek, 1 and 6 in Latin, and 1 and 5a, or an equivalent, in Mathematics, he may, at his option, discontinue the study of any one of these three subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-four Full Courses*.

The Degree of Bachelor of Philosophy.

To obtain the recommendation of the Faculty for the degree of Bachelor of Philosophy, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 1, 2, 5a, 6. *

In French;—(a), for those who entered *without* French, Courses 1, 5, and one and three-fifths Full Courses in advanced work;
or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German;—(a), for those who entered *without* German, Courses 1, 3, and one and three-fifths Full Courses in advanced work;
or (b), for those who entered *with* German, one and three-fifths Full Courses in advanced work.

In English; Courses 1, 2.

In Philosophy; Course 1 or 3.

* Instead of these Courses the student is permitted to take other Courses in Mathematics of equivalent amount.

But after a student has completed Courses 1 and 6 in Latin, 1 and 5a, or an equivalent, in Mathematics, and 1 and 3 in German (if he entered without German) or 1 and 5 in French (if he entered without French), he may, at his option, discontinue the study of Latin, of Mathematics, or of the modern language (French or German) which he began in the University. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in General Science).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for the course in General Science, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 1, 5a, or an equivalent.

In French; (a), for those who entered *without* French, Courses 1, 5;
or (b), for those who entered *with* French, one and three-fifths
Full Courses in advanced work.

In German; (a), for those who entered *without* German, Courses 1, 3;
or (b), for those who entered *with* German, one and three-fifths
Full Courses in advanced work.

In English; Courses 1, 2.

In Philosophy; Course 1 or 3.

In Physics; Course 10.

In General Chemistry; Course 2.

In Zoölogy, in Botany, or in General Biology; one Full Course.

In Physical Sciences or in Biological Sciences; five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in Chemistry).

The requirements for the degree to be given on completion of the course in Chemistry may be found on page 82.

The Degree of Bachelor of Science (in Biology).

The requirements for the degree to be given on completion of the course in Biology may be found on page 83.

The Degree of Bachelor of Science (in Civil, Mechanical, or Mining Engineering).

The requirements for the degree to be given on completion of the courses in Engineering may be found on pages 78 to 81.

The Degree of Bachelor of Letters.

To obtain the recommendation of the Faculty for the degree of Bachelor of Letters, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Course 5a (taken in 1887-8 as a two-fifths Course).

In French; Courses 1, 5, and one and three-fifths Full Courses in advanced work.

In German; Courses 1, 3, and one and three-fifths Full Courses in advanced work.

In English; Courses 1, 2, 4, 9.

In History; Courses 1, 7, 9, or other Courses equivalent in amount.

In Philosophy; Course 1 or 3.

But after a student has completed Courses 1 and 5 in French and 1 and 3 in German, he may, at his option, discontinue either of these two subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

B. GRADUATION ON THE UNIVERSITY SYSTEM.

Admission of Undergraduates.

1. The privileges of the university system are open to undergraduates who have completed their second year of residence, and have also completed at least twelve Full Courses, including all the prescribed work—offered in the first two years—for some one of the Bachelors' degrees.

Conditions for Entering Upon the Work.

2. Before beginning his work each undergraduate student must make application to the Secretary of the Faculty and receive from him a certificate that he is entitled to enter upon the work. This application must be made before the student enters on the work of his third year of collegiate residence. In cases of exceptional character, however, the Faculty may grant permission to begin work on the university system at a later date.

Nature of the Work.

3. Students who are working on the university system are not held to the completion of a fixed number of Courses, but will be required to pursue three distinct lines of study, one "major study" and two "minor studies," and, at the close of the work, to pass a special examination on those studies. The committee in charge of any undergraduate's work may, however, at their option, accept in lieu of the final examination in a minor study, approved work, in the line of that study or germane to it, done on the credit system, equivalent to one-fourth of the amount of work the student would have been obliged to complete before graduation, if he had continued on the credit system.

Supervision of the Work.

4. The work of students carrying on their studies under the university system will be supervised by committees of the Faculty. To carry this provision into effect, ten members of the Faculty have been chosen as chairmen of such committees. The other members of the committee in each case consist of the instructors in charge of the student's work. On making his application to the Secretary of the Faculty each student will be directed to the chairman of the proper committee.

Attendance.

5. Students on the university system are subject to all the rules of this Department relating to attendance and to examinations. No student can be excused from any work that he has once entered upon, nor from any examination, without the consent of the instructor in charge of the work. Examinations passed at the close of each semester on ordinary class work shall not count as an equivalent or in abatement of the final examination to be passed for a degree, except as provided above in paragraph 3.

Bachelors' Degrees.

6. Undergraduates who have been enrolled as candidates under the university system for at least three semesters, may be admitted to a special examination for a Bachelor's degree at a date not earlier than the end of three and a half years of res-

idence at the University. The examination will be conducted by the regular committee and such other persons as they may ask to assist them. Before being recommended for any Bachelor's degree, however, they must have completed all the Courses prescribed for that degree.

II. THE HIGHER DEGREES.

Candidates for Higher Degrees will pursue their studies on the university system, described above. But for the Master's degree a course of study may at the discretion of the Faculty be approved, which does not confine the work rigorously to one major and two minor studies.

I. THE MASTERS' DEGREES.

The Masters' degrees are open to Bachelors of this University, or of any other reputable university or college; a residence of at least one year at the University is required, except as stated below.

1. *Residents*.—Those who have received a Bachelor's degree at this University, or at any other reputable university or college, may be recommended for the corresponding Master's degree after a year's residence at the University, provided they pass examination on an approved course of study, (see paragraph 3 on page 67), and present a satisfactory thesis.

N. B. Students properly qualified may be permitted to pursue at the same time studies for a Master's degree, and studies in any of the professional schools, on condition that the term of study and residence in this Department be extended to cover two years instead of one.

2. *Non-Residents*.—A Bachelor of Arts, Bachelor of Science, Bachelor of Philosophy, or Bachelor of Letters, of this University, who has not resided here since graduation, may be recommended for the corresponding Master's degree, provided he spends at least two years on a course of study approved by the Faculty, passes the required examinations, and presents a satisfactory thesis. *This privilege is restricted to graduates of this University.*

II. THE DOCTORS' DEGREES.

1. The Doctors' degrees shall be conferred only on persons who have previously received a Bachelor's degree, either here or at some other reputable university or college, and also during residence here have made special proficiency in some one branch of study, and good attainments in two other branches, and have presented a thesis that shall evince the power of research and of independent investigation. It is not intended that the Doctors' degrees shall be won merely by faithful and industrious work for a prescribed time in some assigned course of study, and no definite term of required residence can be specified; but it is the practice of the University to require at least one full year of residence of candidates that have already earned a Master's degree, and at least two full years of candidates that have previously taken only a Bachelor's degree.

2. The degree of Doctor of Philosophy shall be open to persons that have received the degree of Bachelor of Arts, or of Bachelor of Philosophy; the degree of Doctor of Science to persons that have received the degree of Bachelor of Science; and the degree of Doctor of Letters to persons that have received the degree of Bachelor of Letters.

III. THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The requirements for these degrees may be found on page 81.

IV. SPECIAL REGULATIONS RELATING TO THE HIGHER DEGREES.

1. Applicants for an advanced degree, whether resident or non-resident, are required to announce to the Faculty, through the President, as early as the fifteenth of October of each year, the particular branches of study to which they wish to give special attention. The supervision of their work will then be entrusted to the proper committee.

2. The subject of the thesis must be announced to the President as early as the first of December of the college year in which the applicant expects to take the degree.

3. It is required in the case of a resident applicant that,

so far as the resources of the University permit, the thesis be upon a subject requiring research. The thesis of a non-resident applicant must also be upon a subject requiring independent research, if possible.

4. The thesis must be completed and put into the hands of the chairman of the proper committee as early as the first of May of the year in which the applicant expects to take the degree.

5. The thesis must be prepared for close scrutiny with reference not only to its technical merits, but also to its merits as a specimen of literary workmanship. It must be preceded by an Analytical Table of Contents, and a carefully prepared account of the authorities made use of.

6. The thesis must be read and defended in public at such time as the Faculty may appoint; and, in case of a Master's degree, a bound copy, either written or printed, must be deposited in the University library.

7. Candidates for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Letters, in case of the acceptance of their theses, are also required to have the accepted theses printed, and to present twenty-five copies of the same to the library of the University, unless by special vote of the Faculty a smaller number is deemed sufficient.

IV. FURTHER DESCRIPTION OF COURSES IN TECHNOLOGICAL AND PROFESSIONAL STUDIES.

Although the University has no School of Technology, as a separate organization, instruction is given in the branches pursued in such a school. Accordingly, fuller statements than are given above concerning the technological courses, are here added; and also statements of special interest to those who desire to pursue extended studies in the physical and biological sciences, in chemistry, and in geology, or to prepare themselves for the profession of teaching. The pharmaceutical courses are described in the chapter on the School of Pharmacy.

I. ENGINEERING.

The University is now better prepared than ever before to

give complete courses of instruction in all branches of engineering, civil, mechanical, and mining. It offers to persons that wish to become professional engineers, thorough courses of study extending over about four years. In these courses of study, the aim of the University is to lay a foundation of sound theory, sufficiently broad and deep to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession; and at the same time to impart such a knowledge of the usual practice of an office, and of an engineering party, as shall make its students useful in any position to which they may be called. While the adaptation of theory to practice can be thoroughly learned only by experience, there are many matters in which the routine work of an engineering field party, office, or drafting room can be carried out on a greater or less scale in a training school.

In *Civil Engineering* all the technical branches are under the direct care of those who have had professional experience as well as a full scientific training, and in all particulars the course embodies as close an imitation of the requirements of active labor as the instructors who have the several branches in charge can devise.

In *Mechanical Engineering* the course of study, though to some extent parallel with that in civil engineering, includes a wide range of special studies. Prominence is given to the study of steam engineering, and in this branch a large amount of practical work is done. The instruction is arranged to accommodate those who wish to devote their time principally to mechanical engineering proper, to steam engineering, or to marine engineering and naval architecture.

In *Mining Engineering and Metallurgy* the course of instruction, which is intended to cover about four years of study, includes a part of that provided for students in civil and in mechanical engineering, though more especial attention is paid in the latter part of the course to mineralogy, geology, and chemistry. The instruction in the technical branches is arranged so as to meet the wants, both of those whose purpose it is to confine their professional work more closely to metallurgy, and of those

who intend to engage in the practice of mining and metallurgy combined.

REQUIREMENTS FOR ADMISSION.

Candidates for a degree in any of the courses in engineering must pass examination for admission as follows:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 30).
2. HISTORY, AND NATURAL PHILOSOPHY.—In both, the same as for the degree of Bachelor of Science (see page 32).
3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 34).
4. CHEMISTRY, GEOLOGY, ZOOLOGY, AND PHYSIOLOGY.—In any two of these subjects (see page 33).

Students not candidates for a degree may be admitted to pursue such studies as they prefer, provided they are found prepared to join the classes in these studies. They will be expected to attend all the lectures, recitations, and examinations in the branches prescribed for the regular students, and will be required to take enough work to occupy them profitably.

COURSES OF INSTRUCTION.

The studies pursued in the earlier part of the course, common to all students in engineering, comprise, in *Mathematics*, algebra, geometry, plane and spherical trigonometry, analytic geometry, and the elements of differential and integral calculus; in *French and German*, an amount covering in all about two years of study; in *English*, a course in higher English grammar and composition; in *Physics and General Chemistry*, the study of the elementary principles; and in *Drawing*, practice in geometrical and in mechanical drawing, and in the study of descriptive geometry.

The more technical subjects are taken up in the latter part of the course. Some of these subjects are of equal value to all classes of engineering students, such as analytic and applied mechanics, the strength and resistance of materials, and the metallurgy of the useful metals, especially iron and steel; others are adapted more particularly to the wants of the special students in the several courses. Their general scope may be seen from the following descriptive outline.

1. *Drawing*.—A very complete course in mechanical drawing is given, embracing plane projection drawing, isometric drawing, descriptive geometry, and the elementary principles of coloring and shading, with original problems executed in the drawing room. Examples from numerical data are always given in all branches, and copying from the flat is avoided. Students of mechanical engineering are required to sketch pieces of machinery, and afterwards to make working drawings suitable for use in the shop. Problems peculiar to mining practice are also given. The plans of surveys, plane-table work, maps, designs in engineering construction, and the thesis drawings naturally come under this head. Instruction is also given in free-hand drawing, topographical drawing, ornamentation and lettering, shades and shadows, linear perspective, and drawing for stone cutting. The work in drawing occupies the student a part of almost every day throughout the course.

2. *Surveying*.—The work in surveying combines theory and practice. A course of lectures and text-book work, in daily exercises, covers so much of one year as is not given to field work; the theory of instruments, and all the operations of surveying, laying out work, and computing, are explained in detail. Every student is afforded abundant opportunity for becoming familiar, by actual use, with the excellent and full assortment of instruments owned by the University, embracing those usually employed in actual work, and numbering enough to equip well the parties. The classes in surveying are drilled in all the field-work that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide areas, and solve problems in heights and distances from data taken by themselves. They also determine the meridian, and take observations for latitude. This work is done during the fall months; the finished plans of the surveys are made during the winter.

The classes in railroad engineering have practice in running levels and curves of different kinds, and in the measurement of earth-work. In the month of June they are taken into the field as a railroad party, for a space of four weeks continuously, where, under competent supervision, they go through all the field work for a projected line; doing all the work up to the

point of actual construction, such as reconnoissance, preliminary and location survey, cross-sectioning, staking out, contouring, and topography. A plan and profile, carefully made in the field by the students from the notes of the party, complete this portion of the subject, and serve to fix the practical application of the principles obtained from the text-books and lectures. In the above work are usually included a plane-table survey, triangulation, and some hydrography when the selected locality is favorable.

The principal text-books used in this work are Johnson's Surveying, Searle's Field-Book for Engineers, and Rankine's Civil Engineering.

3. *Strength and Resistance of Materials*.—A course of recitations and lectures continuing through the first half year is devoted to this subject, and is attended by all the engineering students. The action of the different materials under applied forces, the distribution of stress, and the proper proportions to be given to the different parts of structures in order that they may safely fulfil their several functions, are carefully studied.

4. *Theory of Structures*.—Roofs, in wood and iron, bridge trusses and arches, in wood, iron, and stone, trestles, brick and stone masonry, foundations, tunnels, and, in general, the whole theory of structures are discussed. In this course, as in the preceding (3), Rankine's Civil Engineering is used as a text-book supplemented by full explanations, additional notes, lectures, examples, and problems.

A complete course of instruction is also given in the graphical analysis of roof and bridge trusses and arches, as recently developed and applied. The student is made familiar with both the analytical and graphical methods of treatment, and thus possesses ready proof of the accuracy of his calculations.

5. *Hydraulics*.—The law of the flow of water through orifices and pipes and over weirs, the gauging of streams and rivers, the designing of works for water supply, drainage and sewerage, the laying out of canals, and the subjects of river and harbor improvements are treated in this course.

6. *Machinery, Prime Movers, and Millwork*.—A course of

instruction is given in mechanism, or the general principles of machinery, involving the study of gearing, screws, cranks, and levers, and the dynamics of machinery. In the study of prime movers, special attention is given to turbine and other water wheels, and to steam, gas, and air engines. In the theory of machine construction, problems involving the strength and design of machines, and the materials used in their construction are studied at length, in connection with such examples as illustrate the best practice. The instruction in millwork covers the distribution of power and the arrangement of shafting and machinery as found in leading manufacturing establishments. Practical problems involving the strength of shafting, belting, and gearing, are fully treated. Tests are made to determine the efficiency of machines, and the value of lubricants.

7. *Designs in Engineering and in Machine Construction.*—Contemporaneously with the study of theory students are required to work out problems in design. They are furnished with the usual data for a design, and the kind or type of structure or machine is indicated. They are then expected to make the necessary calculations, paying particular attention to proportioning the different parts so as to secure strength, simplicity, and effect, and to present, at a specified date, complete working drawings, giving full details, accompanied by bills of materials, estimates, and specifications.

8. A course in *Thermodynamics* embraces the study of the principles governing the action of heat engines in general.

9. *Steam Engineering.*—The work in this branch covers the practical use of steam. Furnaces and boilers are studied with reference to proper combustion of fuel, to securing maximum evaporative efficiency, and to proportioning the parts for strength, durability, and accessibility for cleaning and repairs. The care and management of engines and boilers, both in use and out of use, are fully considered. A study is made of the principal steam pumps and pumping engines. The practical application of steam to heating and ventilating purposes is treated by lectures, and by inspection of actual plants. Tests are made to determine the value of fuels, quality of steam, and the efficiency of furnaces, boilers, and engines.

10. *Laboratory Work*.—The laboratory courses in mechanical engineering embrace the experimental courses in the Mechanical Laboratory, and the practical courses in the various work-shops. Instruction is given in the principles governing the action of cutting tools and the principal machines and hand tools used in the shop. Lectures are given on pattern making, moulding, and founding, covering the principal features of each.

The *Shop Practice* covers the application of principles previously studied. It comprises the actual manipulation of the tools used in working metal and wood, and in moulding. The student is required to do work in pattern making, and moulding in green sand, in dry sand, and in loam, and will charge and have the management of the cupola and brass furnace during the operations of casting. Careful attention is given to the operations of founding and to making composition metals for specific purposes. The student is also required to put in practice, at the blacksmith's forge, his knowledge of the elementary principles of forging, and to forge and temper his own cutting tools. By working with iron and steel of different qualities the student becomes familiar with all grades of those materials. Practice is also afforded in soldering, brazing, and steam-fitting.

11. *Marine Engineering and Naval Architecture*.—The instruction in this branch comprises the study of marine engines and propelling instruments, and a course of lectures on the nature of the resistance of ships, the computation of augmented surface, probable resistance, the power necessary to secure a given speed, buoyancy, stability, wave motion, steadiness, determination of centre of gravity and metacentre, causes of rolling, causes of stability, and other topics.

The principal text-books and books of reference used in the work in mechanical engineering are Holtzapfel's *Mechanical Manipulation*, Shelley's *Workshop Appliances*, Spretson's *Casting and Founding*, Rankine's *Steam Engine*, Northcott's *Steam Engine*, Rankine's *Machinery and Millwork*, Zeuner's *Valve Gears*, Wilson's *Steam Boilers*, Unwin's *Elements of Machine Design*, Goodeve's *Elements of Mechanism*, Thearle's *Theoretical Naval Architecture*, Seaton's *Marine Engineering*, Wood's *Thermodynamics*, Clerk's *Gas Engines*.

12. *Economic Geology*.—Particular attention is paid to the geology of mines and mineral districts, and to the modes of occurrence and distribution of mineral substances that have an economic or commercial importance.

13. *Mining*.—In this branch the instruction is given mainly by lectures. The machines in use at the best mines are described, and the mutual relations of parts explained and illustrated with the aid of plates and diagrams. The different operations connected with the discovery, opening, development, and working of mines are all studied in their proper order.

14. *Metallurgy*.—A complete course of instruction by lectures and recitations is given upon the subjects of fuel, refractory material, iron and steel, copper, zinc, lead, gold, silver, and other metals, extending over an entire year. The lectures are illustrated by charts and drawings of furnaces and appliances used, and by samples of furnace products. In connection with this course of study, the student is required to work out problems in heat, furnace construction, ore mixtures, blast-furnace slags, and blast engines, and to write out the chemical reactions that take place in the different metallurgical operations. Certain days are devoted to laboratory work, and the student is required to determine by actual tests the heating value of different fuels, to make tests of fire-proof material, and, from data and material furnished, to produce slags whose composition shall correspond to a given formula.

15. *Visits of Inspection*.—As often as may be practicable, visits are paid to the neighboring manufacturing establishments, for the purpose of acquiring a knowledge of the methods employed in building, and in the construction of bridges, machinery, and ships.

FACILITIES FOR INSTRUCTION.

The collections for illustrating the instruction given comprise models, drawings, photographs, and lithographs, representing trusses, arches, and details of construction in iron, wood, and stone; also shapes of iron, working models of turbines and engines, and working drawings of a number of bridges. These collections are receiving additions from year to year, by gift and

purchase, and are invaluable to the student. Valuable gifts of machinery have been received during the past four years aggregating nearly \$5,000 in value.

The Mechanical Laboratory (see page 25) is a large and well lighted room containing the apparatus and machinery necessary to carry out a variety of experiments. It is not only a laboratory for experiment, but also for research in technical subjects; and it is open to graduates and others desiring to seek data which may form the basis of theses.

Tests of engines and boilers, and of machinery in general, will be made on request, and the profits of such work devoted to extending the facilities of the laboratory. The data of all experiments and tests made are kept in the laboratory records.

All of the laboratory work is on a practical basis, and is done as nearly as possible as it would be done in any well arranged manufacturing establishment. There is also a large and convenient metallurgical laboratory connected with the chemical laboratory, amply supplied with assay furnaces and other appliances such as are usually found in laboratories of this description. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all; and frequent references are made to them in the class-room as the various subjects are brought forward.

EXAMINATIONS.

Examinations, usually in writing, are held at the end of each semester, but the classes are liable to be examined at any time, without notice, on any portion of their previous work.

REQUIREMENTS FOR GRADUATION.

Upon the completion of a prescribed course of study, amounting to twenty-five Full Courses,* as given below, and the presentation of a satisfactory thesis, the student receives the degree of Bachelor of Science. The diploma given indicates the line of study pursued.

Bachelors of Arts, of Philosophy, of Science, and of Letters,

*For explanation of the term Full Course, see page 63; and for further information in regard to the Courses prescribed for graduation see pages 88 to 93.

of this University, and graduates of any other reputable college, are recommended for the same degree with the regular students, after attendance on, and a satisfactory examination in, the technical subjects alone of the several courses. These studies can be completed in two years. The culture imparted by classical or other liberal training will be found to have its uses for one engaged in engineering work, and the previous discipline of the faculties in exact research will enable the professional student to master more easily the requirements of the course. All the time the student can devote to general studies before taking up specialties will be well spent.

The requirements for the several degrees are as follows:

1. *In Civil Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Civil Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 1, 3, 5, 11, 13, 16.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Mineralogy; Course 1.

In Astronomy; Course 3.

In Drawing; Courses 1, 2, 4, 5, 6.

In Surveying; Courses 1, 2, 3, 4.

In Civil Engineering; Courses 1, 2, 3, 3a, 4, 5, 7, 8, 9, 10.

In Mechanical Engineering; Course 7.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

2. *In Mechanical Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mechanical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 1, 3, 5, 11, 13, 16.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Mineralogy; Course 1.

In Drawing; Courses 1, 5, 6, 9.

In Surveying; Course 5.

In Civil Engineering; Courses 1, 3, 9.

In Mechanical Engineering; Courses 1 to 12, except 1a and 4a.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

3. In Mining Engineering.

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mining Engineering, the student must complete one of the two following sets of requirements:

I.

(*Mining.*)

In Mathematics; Courses 1, 3, 5, 11, 13, 16.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Courses 1, 5a, 9, 10.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Surveying; Courses 1, 2.

In Civil Engineering; Courses 1, 3, 5, 7.

In Mechanical Engineering; Course 7.

In Mining Engineering; Course 1.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and

complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

II.

(*Metallurgy.*)

- In Mathematics; Courses 1, 5a (taken in 1887-8 as a two-fifths Course).
- In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.
- In English; Course 1.
- In Physics; Course 10.
- In General Chemistry; Course 2.
- In Analytical Chemistry; Courses 1, 5a, 5a', 5a'', 10, 12.
- In Mineralogy; Course 2.
- In Geology; Courses 8, 9.
- In Drawing; Courses 1, 3, 5.
- In Mechanical Engineering; Courses 1, 2, 4.
- In Mining Engineering; Course 1.
- In Metallurgy; Courses 1, 2.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

REQUIREMENTS FOR THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The conditions on which the degree of Civil Engineer, as a second degree, is conferred, are as follows:

The degree of Civil Engineer may be conferred upon Bachelors of Science of this University, who have taken the degree for a course in civil engineering, if they furnish satisfactory evidence that they have pursued further technical studies for at least one year, and, in addition, have been engaged in professional work, in positions of responsibility, for another year. The first of the above requirements may be satisfied by pursuing at the University, under the direction of the Faculty, a prescribed course of study for an amount of time, not necessarily consecutive, equivalent to a college year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor of civil engineering, and he must prepare a satisfactory thesis on some engineering topic, to be presented, together with a detailed account of his professional

work, one month, at least, before the date of the annual Commencement at which he expects to receive the degree.

The conditions on which the degrees of Mechanical Engineer and Mining Engineer, as second degrees, are conferred upon Bachelors of Science of this University who have taken the degree for a course in mechanical engineering or in mining engineering, are analogous in character and in amount to those given above for the degree of Civil Engineer.

II. THE PROFESSIONAL STUDY OF CHEMISTRY.

A course of training is provided, extending through four college years, giving a practical preparation for the pursuit of an analytical and consulting chemist. The work is also adapted to the purpose of teaching, or research in chemical science. After devoting one year mainly to the German and French languages as a basis for their use in scientific literature, and to mathematics as a support for physics and chemistry, the student enters directly upon laboratory practice in analytical chemistry, which extends through the remainder of the course. Qualitative analysis begins with the second year, and quantitative analysis is reached in the second semester of this year. Organic chemistry begins with the third year, in the second semester of which a study of chemical philosophy is taken. Laboratory physics may be taken in the third year. The larger part of the fourth year is devoted to original research, both experimental and literary. Manufacturing chemistry is given in the last year.

Candidates for the degree of Bachelor of Science in Chemistry are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 32).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Chemistry, the student must complete *twenty-six Full Courses*. The prescribed portion of the work is as follows:

In Mathematics; Courses 1, 5a.

In French; (a), for those who entered *without* French, Courses, 1, 4, 5;
or (b), for those who entered *with* French, Course 4.

In German ; (a), for those who entered *without* German, Courses 1, 3 ;
or (b), for those who entered *with* German, Courses 2 or 10, and
11 or 12.

In English ; Course 1.

In Drawing ; Course 3 or 4.

In Geology ; Courses 1, 9.

In Physics ; Course 10.

In General Chemistry ; Courses 2, 3.

In Analytical and Organic Chemistry ; Courses 1, 2, 5a, 5a' 6, 6a, 10, 11.

In Mineralogy ; Course 2.

In Chemistry ; additional, three Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*. Among his elective studies he is recommended to take (a) Course 2 in Botany, (b) Course 3 in Physics, or (c) Course 1 in Metallurgy and Course 12 in Analytical Chemistry.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY.

The University curriculum has been altered and enlarged in order to provide a specific course of study for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research.

In the first year, modern languages, mathematics, and drawing, and in the second year, elementary physics and chemistry are required, as being absolutely essential to the successful prosecution of an extended course in science. Zoölogy, botany, and physiology are the most prominent subjects of the course, but full opportunity is given for extended work in physics, chemistry, palæontology, and other sciences. The laboratories of the University are provided with the necessary facilities not only for ordinary biological work, but for somewhat extended research, and every encouragement will be given to students, especially in the last year, to devote themselves to original investigations.

Candidates for the degree of Bachelor of Science in Biology are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 32).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Biology, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 1, 5a.

In French; (a), for those who entered *without* French, Courses, 1, 4, 5;
or (b), for those who entered *with* French, Course 4.

In German; for those who entered *without* German, Courses 1, 3.

In English; Course 1.

In Philosophy; Course 1 or 3.

In Physics; Course 10.

In General Chemistry; Course 2.

In General Biology; Course 1.

In Zoölogy; Courses 1, 9.

In Botany; Course 6.

In Physiology; Courses 1, 2.

In Sanitary Science; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

The following plan of study may serve to guide students in arranging the prescribed portion of their work, and also to indicate some of the subjects recommended for electives.

FIRST YEAR. *Prescribed:* Mathematics 1, 5a; French 1, 5, or French 4 and German 1, 3 (whichever the student is qualified to pursue); English 1; Drawing 4.

Elective: French or German; Mineralogy 1; Geology 1, 2; Botany 3.

SECOND YEAR. *Prescribed:* French 4 (if not previously taken); Philosophy 1 or 3; Physics 10; General Chemistry 2; General Biology 1; Zoölogy 9; Botany 6.

Elective: Mathematics 2 or 13, 6 or 16; French or German; Zoölogy 4.

THIRD YEAR. *Prescribed:* Zoölogy 1; Physiology 1, 2.

Elective: English 2; Physics 3; Analytical Chemistry 1, 8; Geology 7; Botany 5; Zoölogy 6, 8, 10.

FOURTH YEAR. *Prescribed:* Sanitary Science 1.

Elective: Analytical Chemistry 4; Special Investigations in Zoölogy, Botany, and Physiology.

IV. SUGGESTIONS TO STUDENTS PURSUING SPECIAL STUDIES IN SCIENCE.

Students who desire to pursue a special line of study in any of the physical sciences or in geology will observe the importance of taking the elementary Courses early enough to enable them

to follow the proper consecutive order in the studies desired. The following schedules of studies in physics, in astronomy, and in chemistry, are given as guides to candidates for any of the Bachelors' degrees, who wish to pay special attention to those branches of science. The schedule of studies in geology is somewhat fuller, and is recommended to candidates for the degree of Bachelor of Science, who desire an education which shall be specially geological.

A. PHYSICS.

First Year. Mathematics 1, 5 or 5a; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 3, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3 with Mathematics 11 and Mechanical Engineering 6, or Analytical Chemistry 1; Philosophy 3; Physics 7, 12; General Chemistry 4; Astronomy 2, 5; Mineralogy 1 or 2.

Fourth Year. Philosophy 1; Physics (unless previously taken) 7, 12; General Chemistry 3; Mechanical Engineering 1, 2, or 4; and, if the student has time for them, Mathematics or Quantitative Analysis; Botany 3.

B. ASTRONOMY.

First Year. Mathematics 1, 5 or 5a; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3, 11; Philosophy 3; Physics 7; General Chemistry 4 or 5; Astronomy 2, 5, 8, 9; Mineralogy 1.

Fourth Year. Philosophy 1; Astronomy 1, 4, 10; Mechanical Engineering 1, 2, or 4.

C. CHEMISTRY.

First Year. Mathematics 1, 5 or 5a; Geology 1; Drawing 1, 4, 9 (if the student has time for them).

Second Year. Physics 3, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken); Mathematics 2 or 13, 6 or 16, and General Chemistry 5 (if the student has time for them).

Third Year. Philosophy 3; General Chemistry 5 (if not previously taken); Analytical Chemistry 1, 5, 6; Mineralogy 2.

Fourth Year. General Chemistry 3; General Chemistry 6 with Analytical Chemistry 5a', 11, 11a, 12, or Analytical Chemistry 7, 8, 8a, 11; Botany 2; Philosophy 1 and Mechanical Engineering 1, 2, or 4 (if the student has time for them).

D. GEOLOGY.

First Year. Mathematics 1, 5 or 5a; French 1, 5, or French 4 and German 1, 3 (whichever the student is qualified to pursue); English 1;

Geology 1, 2; General Biology 1; Zoölogy 1; and, if practicable, a Course in Scientific Nomenclature.

Second Year. French 4 (if not previously taken); German; Physics 10; General Chemistry 2; Geology 3, 5, 6, 7; Drawing 4, 7.

Third Year. English 2; Philosophy 1, 3; Analytical Chemistry 1; Mineralogy 2; Geology 4. It is also recommended that electives be chosen from the following: Mathematics 2 or 13, 6 or 16; Analytical Chemistry 10; Astronomy 2; Geology 7.

Fourth Year. Geology 4 continued as 4a, 7 continued as 7a, 8; Drawing 2; Metallurgy 1, 2. It is also recommended that electives be chosen from the following: Mathematics 11; Physics 7; Astronomy 5; Zoölogy 7; and advanced Courses in Mineralogy and Lithology, Geology and Palæontology, Zoölogy, Physiology, Histology.

V. THE SCIENCE AND THE ART OF TEACHING.

The aims of the University in providing instruction in the Science and the Art of Teaching, are:

1. To fit University students for the higher positions in the public school service.

It is a natural function of the University, as the head of our system of public instruction, to supply the demand made upon it for furnishing the larger public schools with superintendents, principals, and assistants. Year by year these important positions are falling more and more into the hands of men that have received their education in the University. Till recently, the training given to our graduates has been almost purely literary; it has lacked the professional character that can alone give special fitness for the successful management of schools and school systems. Now, however, the University offers students that wish to become teachers ample facilities for professional study.

2. To promote the study of educational science.

The establishment of a chair of Teaching is a recognition of the truth that the art of education has its correlative science; and that the processes of the school room can become rational only by developing and teaching the principles that underlie these processes. Systems of public instruction are everywhere on trial, and the final criteria by which they are to stand or fall must be found in a philosophical study of the educating art.

3. To teach the history of education, and of educational systems and doctrines.

The supreme right of the school is to grow; and much hurtful interference might be avoided by ascertaining the direction of educational progress and the history of educational thought.

4. To secure to teaching the rights, prerogatives, and advantages of a profession.

5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

THE TEACHER'S DIPLOMA.

The Teacher's Diploma will be given to resident graduates and to students of the University at the time of receiving a Bachelor's or a Master's degree, provided the candidate has completed three Courses of study offered by the professor of the science and the art of teaching, viz., Courses 1 and 2, and some three-hour Course; and, also, at least one of the Teachers' Courses offered by other professors, and by special examination has shown such marked proficiency in the Course chosen as qualifies him to give instruction.

V. THE SCHOOL OF POLITICAL SCIENCE.

Since the establishment, in 1881, of the School of Political Science, experience has shown that, under the flexible elective system now in force in this Department, instruction in the studies peculiar to such a school may be provided without maintaining any sharply defined independent organization. Under the general designation of Political Science may be enumerated the classes in political and constitutional history; in political economy; in sanitary science; in constitutional law; in international law and diplomacy; in the principles of finance; in the financial history of the United States; in theories and methods of local government; in theories and methods of taxation; in political ethics; in the historical development of educational systems.

The general scope of the instruction is indicated in the an-

nouncement of Courses in history (page 48); Courses on the historical development of educational systems (page 50); and Courses on the economic sciences, and on international law and diplomacy (page 51).

All candidates for degrees in the Department of Literature, Science, and the Arts, if properly qualified, are admitted to the classes above mentioned. Students not candidates for a degree may also be admitted to these classes provided they have already matriculated in this Department and provided, further, they satisfy the officer in charge of the class they desire to enter, that they are qualified to pursue the work with advantage to themselves and without detriment to others.

The General Library is believed to be one of the best in the country for the use of students carrying on investigations in Political Science. It consists of about 49,000 volumes and 11,500 pamphlets. The Rau Library, presented to the University by Hon. Philo Parsons of Detroit, contains about 4,300 volumes and 5,000 pamphlets, and is especially rich in European works on the science of government, political economy, and cognate subjects. This collection has been supplemented recently with more than 2,500 volumes on political and constitutional history and methods of local government in Europe and America.

Those desiring more particular information on any subject connected with the School of Political Science are requested to address Professor Richard Hudson.

VI. RULES AND REGULATIONS OF THE DEPARTMENT.

I. ELECTION OF STUDIES.

1. The maximum number of hours a week a student may elect without special permission of the Faculty is as follows:

During the first year, sixteen hours:

During the second year, eighteen hours:

During the third year, eighteen hours:

During the fourth year, twenty hours.

In cases of exceptional proficiency additional hours are granted by the Faculty on especial request; but in all cases requests for permission to take an additional number of hours

must be made in writing, and must be deposited in the Secretary's box on or before the *first Monday* of the semester during which the additional work is desired.

2. In their first year, students are recommended to make their elections in accordance with the following schemes. In cases where, for good reasons, it is not practicable to elect sixteen hours, a smaller number (fifteen, or fourteen) may be chosen.

I. For candidates for the degree of Bachelor of Arts:

First Semester: Greek, four hours; Latin, three hours; Mathematics, three hours; French, four hours; English, two hours.

Second Semester: Greek, four hours; Latin, four hours; Mathematics, four hours; French four hours.

II. For candidates for the degree of Bachelor of Philosophy:

First Semester: Latin, three hours; Mathematics, three hours; French and German, eight hours; English, two hours.

Second Semester: Latin, four hours; Mathematics, four hours; French and German, eight hours.

III. For candidates for the degree of Bachelor of Letters:

First Semester: Mathematics, two hours; French, four hours; German, four hours; History, or elective studies, six hours.

Second Semester: French, four hours; German, four hours; English, two hours; History, or elective studies, six hours.

IV. For candidates for the degree of Bachelor of Science (in General Science):

First Semester: Mathematics, three hours; French and German, eight hours; elective studies, five hours.

Second Semester: Mathematics, four hours; French and German, eight hours; English, two hours; elective studies, two hours.

V. For Candidates for the degree of Bachelor of Science (in Chemistry and in Biology):

The same as for the course in General Science, except as modified by differences in French and German.

VI. For Candidates for the degree of Bachelor of Science (in the Engineering Courses):

a. In Civil Engineering:

First Semester: Mathematics, four hours; English, two hours; Mineralogy, two hours; Drawing, four hours; French, German, or elective studies, four hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours.

b. In Mechanical Engineering:

First Semester: Mathematics, four hours; English, two hours; Drawing, two hours; Mechanical Engineering, five hours; French, German, or elective studies, three hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours.

c. In Mining Engineering:

First Semester: Mathematics, three or four hours; English, two hours; Drawing, two or three hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

3. Except as provided in (1) and (2) each student may elect his studies and may pursue them in any order he may choose, subject only to the following restrictions:

(a) Before entering on any study the student must give the professor in charge satisfactory evidence that he is prepared to pursue it with advantage.

(b) If he is a candidate for a degree, he must at some time take all the studies "required" for the degree he seeks.

(c) No student will be allowed to elect merely a part of a Course without special permission from the Faculty.

(d) No credit will be allowed to a student for work in any Course, unless the election of the work is formally made and reported to the Secretary of the Faculty before the work is begun.

(e) After the second Monday of each semester no study can be taken up or dropped without special permission of the Faculty.

(f) The Faculty will require a student to drop a part of his work at any time, if in their opinion he is undertaking too much; or to take additional work, if they think he is not sufficiently employed.

(g) The Faculty reserve the right to withdraw the offer of any study not chosen by at least six persons.

4. After matriculation, a student cannot, without special permission of the Faculty, be admitted to examination in any one of the Courses given, until he has received in the University the regular instruction in such Course.

5. The student is urged to make his choice of studies with

care, and with reference to some plan. The members of the Faculty will be ready to give advice and assistance in this regard.

II. EXAMINATIONS.

1. All students of this Department, whether candidates for a degree or not, if at work upon the credit system, are required to attend all the examinations in the Courses of study they pursue.

2. No student absent from any regular examination in any Course of study that he may have pursued, will be allowed to take such omitted examination before the next regular examination in that Course. In cases of great urgency, however, the Faculty may grant students special permission to be examined at an earlier date.

3. No student whose examination in any Course is reported as "*Incomplete*," will receive credit for that Course until after the examination has been completed. In case, however, the examination be not completed within one year, the unfinished Course will be regarded and treated as "*Not Passed*."

4. Any student reported as passed "*Conditionally*" in any Course, must remove the condition within one year from the date of the examination in which it was incurred; otherwise, the Course passed conditionally will be regarded and treated as "*Not Passed*."

5. Any student reported as "*Not Passed*" in any Course, will receive no credit for that Course until he has again pursued it as a regular class exercise and has passed the regular examination in the same.

6. Any student detected in the use of illegitimate help at any examination, will be regarded as an *Absentee* from that examination, and will be treated as such.

7. All students are regarded as strictly on probation until they have removed all conditions incurred in the examinations for admission to the University. All such conditions must be removed during the year following the date of the examination. Students who have any admission conditions outstanding at the

beginning of their second year of residence will not be allowed to join their classes until such conditions are removed.

III. RELATION TO OTHER DEPARTMENTS.

1. Candidates for a degree in this Department, who wish to pursue studies in any other Department, may be granted that privilege, provided they lack no more than three Full Courses for graduation, and distribute their work in this Department as evenly as possible throughout the year.

2. All students admitted from other Departments of the University to the privileges of this Department are regarded in the class-room as members of this Department, and are required to pass the regular examinations with the classes in which they are enrolled. Violations of this requirement will be deemed a forfeiture of the privileges of this Department; but this rule is not to be interpreted as applying to those who are permitted to attend lectures or other exercises without being enrolled.

IV. ATTENDANCE AND DISCIPLINE.

The State of Michigan extends the privileges of the University without charge for tuition, to all persons of either sex, who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission of the President.

Such delinquencies as tardiness, absence, deficiencies, and offenses against good order, in the several departments of instruction, are ordinarily dealt with by the professor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed, whenever in the opinion of the Faculty they are pursuing a course of conduct seriously detrimental to themselves or to the University.

The following is a By-Law of the Regents:

"Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfil, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time he shall be dismissed."

VII. FEES AND EXPENSES.

For information in regard to fees and expenses, see page 27.

DEPARTMENT OF Medicine and Surgery.

I. THE COLLEGE YEAR.

The thirty-ninth course of instruction in the Department of Medicine and Surgery will begin October 1st, 1888, and will continue till the last part of June, 1889. There will be a Thanksgiving recess of three days, beginning on Tuesday evening before Thanksgiving; a holiday vacation from the evening of December 21st, 1888, to the evening of January 7th, 1889; and a spring recess from the evening of March 22d, to the evening of April 1st, 1889. The lectures will continue to June 15th, 1889, at which time certificates will be given to those who have complied with the requirements for a full course. The examinations will then commence and be concluded in time for the Commencement exercises, June 27th, 1889.

II. EXTENSION OF THE COURSE.

To meet the requirements of the constantly increasing demands of medical science, and to accommodate and benefit those students who desire a thorough medical education, the course of instruction was some years ago extended to three full college years, of nine months each; and it is gratifying to know that this extension is appreciated, as is evinced by a large attendance of enterprising students, who have talent, energy, perseverance, and high aims.

In this improved arrangement a successive or graded course of study is combined with repetition of the more important lectures, thus obviating the serious objection of dismissing one part of a connected subject before its relations to other parts can

be seen and appreciated, and also avoiding the confusion incident to the presentation at the same time of so many parts of the general subject to the mind of the student at an early period of his studies.

This extended course affords time for the teaching and study of subjects not generally taught, or but very imperfectly, in many medical schools; and especially will it give more time for thorough work in the laboratories now provided. Though not fully supplying the defects of preliminary education, this longer course, accompanied by repeated examinations and written exercises, will supplement some deficiencies of earlier training, and of itself will be a most efficient means of mental discipline, and of literary as well as scientific culture. The practical results of this improvement have been most gratifying to the Faculty, to the patrons of the college, and to the students themselves.

III. REQUIREMENTS FOR ADMISSION.

Every candidate for admission to the Department of Medicine and Surgery must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character.

Women are admitted, as to all other departments of the University, on the same conditions as men.

No previous study of medicine is required for admission. Candidates are asked to give an account of their previous educational advantages, and are examined, in writing, as to their elementary education and their fitness to pursue profitably the technical study of medicine. They are required to show familiarity with the subjects included in a good English education. The requirements for admission are as follows:

1. A competent knowledge of Arithmetic, Spelling, and Grammar, and the Art of Composition; and a respectable acquaintance with English Literature, such, for instance, as may be acquired by the study of Shaw's Manual of English Literature, or some similar work.
2. A competent knowledge of Political and Physical Geography. Any of the advanced Geographies used in the higher schools, and Guyot's Physical Geography, are recommended as text-books.
3. An outline of the history of modern civilized nations, and especi-

ally of American history; such as may be found in the Manuals of History, used as text-books in high schools.

4. A competent knowledge of elementary Zoölogy, including an acquaintance with the characteristics of the principal divisions of the animal kingdom. Packard's Zoölogy may be cited as an illustration of a work to be studied.

In addition to the above requirements, *which alone* are insisted upon, students are recommended to acquire such a knowledge of the Latin language as will enable them to read and write correctly current or ordinary prescriptions, and appreciate the technical language of the natural sciences and of medicine. It is also considered highly desirable that they have a general grammatical acquaintance with the German and French languages. A similar acquaintance with Greek will also be serviceable to the student, and is highly recommended. But a knowledge of these ancient and modern languages is not required for admission.

Graduates or matriculates of any department of this University, or of any other university or college, or of any academy or high school approved by the Faculty of this Department, and persons having certificates based on examination by some recognized medical society, or persons holding first-class or approved certificates from any reliable public school board of being properly qualified as teachers, will not be required to pass any examinations, but will be admitted on the presentation of the proper evidence to the Secretary of the Faculty.

The examination will be held at 2 p. m., Friday, September 28, 1888. Candidates are required to present themselves at this time as they are expected to be in attendance on the first day of the term, when the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidates to be present at the time announced, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt

for the payment of the matriculation fee and the annual fee. It will, therefore, be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Department of Medicine and Surgery, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Should students be ready to begin the study of medicine near the opening of the term in October, it is advised that they enter the Department at once and remain continuously during the three college years—the instruction in the graded course being adapted to beginners. Should it be more convenient for them to begin medical studies at a period distant from the opening of the college year, they should procure one of the text-books in anatomy, in physiology, in chemistry, and perhaps in general pathology and materia medica, and a medical dictionary. A study of such works, even without a preceptor, will afford some general acquaintance with these fundamental subjects, and will, at least, give a knowledge of terms that will be of service in more readily comprehending the lectures.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one year, may be admitted to advanced standing after having passed a satisfactory examination on all the studies which have already been pursued by the class to which they seek admission.

It is, however, very earnestly recommended that students, even though they may be able to pass a fair examination on the first year's studies, should nevertheless spend the whole three years in this Department and take the regular graded course. If not, they must lose some of the lectures, many important demonstrations, and class recitations in anatomy and other subjects; they will be much restricted for time to do the amount of work required in the laboratories, and will also be obliged to lose many of the clinics and special practical exercises, and some of the hospital work provided for the last year's instruction.

IV. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in

the order in which they pay their fees to the Treasurer, and each student is expected to occupy during the session the seat selected. But, by courtesy, at the clinical and other practical lectures, members of the graduating class are allowed the privilege of seats nearest the patient and the lecturer.

V. COURSE OF INSTRUCTION.

The course of instruction consists of the lectures and exercises shown in the table on pages 99 and 100.

In this course the studies are so arranged that they may be pursued in the following order:

FIRST YEAR.—Human and Comparative Anatomy, Embryology, Histology, Physiology, Chemistry, Botany, Sanitary Science and Physiological Chemistry, Materia Medica and Therapeutics.

SECOND YEAR.—Continuation in review of Anatomy, Histology, Physiology, Chemistry, and Materia Medica and Therapeutics; with Pathology and Practice of Medicine, Surgery, and Obstetrics.

THIRD YEAR.—Practice of Medicine, Surgery and Surgical Anatomy, Obstetrics and the Diseases of Women and Children, Ophthalmology and Otology, and Laryngology, with Clinical Medicine and Surgery, and Clinical Gynæcology.

The above list is understood to include all the special studies that appertain to, and form an essential part of, the general subjects enumerated. Such are: histology, physiological and pathological; laboratory work in medical chemistry, in microscopy, and in electro-therapeutics; qualitative, physiological, and pathological analyses; toxicology; physical diagnosis, etc.

The lectures are so arranged that the more elementary subjects are presented before the student proceeds to those more advanced, so as to secure, as far as practicable, an orderly succession of studies; while the more fundamental subjects are presented a second time during the course, so as to secure a more perfect comprehension of their principles and relations, and to fix the facts more firmly in the mind. The hours of the required lectures are so arranged, four being given each day, that but few are given at the same time, and every facility is afforded for students to attend the repetition of the principal lectures as often as may be thought profitable. The Faculty recognize, what is evident in the experience of all medical stu-

 OUTLINE OF STUDIES.

SUBJECTS/	Number of Courses required.	Number of Lectures in each Course.	Number of Lectures required.	REMARKS.
Anatomy—Descriptive.....				Delivered in Anatomical Amphitheatre.
1st year.....	1	80		
2d year.....	1	80	180	
Anatomy—Surgical.....	1	36	36	In General Lecture-room, to Senior class.
Embryology—Comparative.....	1	20	20	In Anatomical Amphitheatre, with illustrations.
Anatomy—Practical.....	1	---	---	Requiring twelve weeks of afternoon work in the Dissecting Rooms.
Physiology.....	2	80	160	Didactic Lectures in Amphitheatre, with illustrations.
Physiology.....	---	---	---	A special course of Laboratory work in Physiology is offered to the second year's class. (Optional).
Study of Bacteria.....	1	10	10	In General Lecture-room.
Histology and Microscopy.....	1	40	40	In General Lecture-room, with illustrations.
Histology with practical use of the Microscope, Mount- ing, etc.....	---	---	---	In sections in the Histological Laboratory. Fifteen lessons of afternoon work.
Histology, Advanced.....	---	---	---	In sections of five. Thirty lessons of afternoon work. (Optional).
Botany.....	1	20	20	In Amphitheatre, with illustrations.
General Pathology.....	2	20	40	In General Lecture-room.
Pathological Anatomy.....	1	30	30	In Amphitheatre, with illustrations.
General Chemistry.....	2	48	96	In General Lecture-room, with illustrations.
Physiological Chemistry.....	1	60	60	In General Lecture-room.
Organic Chemistry.....	2	25	50	In General Lecture-room.
Pathological Chemistry.....	---	---	---	Continuing through college year. (Optional).
Qualitative Chemistry.....	1	---	---	Requiring twelve weeks of afternoon work in the Chemical Laboratory.
Analysis of Urine.....	1	---	---	Requiring twelve weeks of afternoon work in the Chemical Laboratory.
Medical Jurisprudence.....	2	15	30	In General Lecture-room.
An Extended Course in An- alysis and Toxicology.....	---	---	---	Continuing through a college year in Laboratory. (Optional).
Zoology, and Physics.....	---	---	---	Instruction given in the Department of Literature, Science, and the Arts. (Optional).
Materia Medica and Thera- peutics.....	2	60	120	In General Lecture-room.

 OUTLINE OF STUDIES CONTINUED.

SUBJECTS.	Number of Courses required.	Number of Lectures in each Course.	Number of Lectures required.	REMARKS.
Electro-Therapeutics.....	---	---	---	Twelve lessons—practice with instru- ments in Laboratory. (Optional).
Physical Diagnosis.....	2	16	32	In General Lecture-room, supplemented in the Hospital.
Diseases of the Skin.....	1	20	20	In Hospital Amphitheatre.
Sanitary Science.....	1	20	20	In General Lecture-room.
Obstetrics.....	2	60	120	In General Lecture-room.
Physiology and Pathology of Menstruation.....	1	20	20	In Hospital Amphitheatre.
Diseases of Women and Chil- dren.....	2	45	90	In General Lecture-room.
Clinical Gynaecology and Dis- eases of Children.....	1	72	72	In Hospital Amphitheatre.
Ophthalmology and Otology..	1	24	24	In Hospital Amphitheatre.
Laryngology.....	1	24	24	In Hospital Amphitheatre.
Eye and Ear Clinic.....	1	72	72	In Hospital Amphitheatre.
Clinical Ophthalmology, at ir- regular hours.....	1	128	128	In Hospital, with sections of the class. (Optional).
Systematic Surgery.....	2	80	160	In General Lecture-room.
Minor Surgery.....	1	36	36	In Hospital Amphitheatre.
Clinical Surgery.....	1	72	72	In Hospital Amphitheatre.
Clinical Surgery, often shorter lessons.....	1	128	128	In Hospital Amphitheatre. (Optional).
Practice of Medicine. (Syste- matic).....	2	90	180	In General Lecture-room.
Clinical Medicine.....	1	148	148	In Hospital Amphitheatre.

dents, that attendance upon lectures on the same subject a second time, after other related branches have been studied, is much more interesting and profitable than the first; and hence they require students to attend lectures on all the leading subjects more than once.

The apparatus to illustrate the lectures in chemistry and chemical physics is very full and complete, and the apparatus in the course on electro-therapeutics consists of representative specimens of the principal foreign and American manufactures.

Working models of these are put into the hands of each student for practical use.

The Chemical Laboratory provides thorough instruction and suitable appliances for the practical study of all branches of medical chemistry. In each of the two laboratory courses *required for graduation*, namely, Qualitative Chemistry (devoted to the study of chemical changes and incompatibilities), and Analysis of Urine (applied to clinical uses and physiological study), students are taken in sections of limited number for daily drill in the class-room, to direct the daily practice in the laboratory. Before beginning laboratory work the student takes a preparatory course, with daily recitations, in chemical notation, and at the close of the work in each course is held to an examination. In each of the required courses just mentioned one section begins work October 1; another section, the first week in January; and a third, the first week in April.

By an act of the Legislature, a liberal appropriation for the equipment and conducting of a Histological Laboratory has been made. It is supplied with between twenty and thirty superior microscopes of American manufacture, besides others imported from Europe, and with a stereopticon and duplicates of complete apparatus for use in microscopical investigation. The student thus becomes familiar with the manipulation of microscopes, and studies the most important tissues of the body, and the methods employed in preparing and mounting specimens. During the last college year nearly three hundred students availed themselves of the opportunities for study here offered.

Opportunity for special work in advanced histology is offered to those who have taken the regular work in that branch. In this course are included original investigations and the more systematic study of normal and pathological histology. Students take this advanced work in classes of five each.

A special course in the Pathological Laboratory, lasting from twelve to fifteen weeks, is offered to all students who have become sufficiently familiar with normal histology and the use of the microscope.

Two extended optional courses have also been established, one in Physiological and Pathological Chemistry, and another

in Toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in qualitative and quantitative analysis, and the special examination of foods and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiology, physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in quantitative analysis, and in pharmaceutical preparations, are also open to the students of medicine who may desire such special training.

Clinics are regularly held in the Hospital Amphitheatre every day during the college year, for medical, surgical, gynæcological, and ophthalmological cases, at which time examinations are made, prescriptions given, and surgical operations performed, in the presence of the class.

Lectures on the Law relating to Physicians are given by Professor Rogers, Dean of the Department of Law.

The students are frequently examined upon the subjects of the lectures in progress, either by the professors or their assistants, and these examinations are regarded as an important part of the teaching.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and such of the lectures and demonstrations as it is thought by each member of the Faculty not desirable to be presented to the combined classes, are given separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various other class exercises, it is found that both may with propriety be united.

EXAMINATIONS.

Written examinations are held in the middle and at the end of the year, and the student may be called upon to write upon

some theme assigned by the instructor or selected by himself; the essay, if required, to be defended before the class.

The final examinations in Chemistry, Anatomy, Physiology, and Materia Medica and Therapeutics, are held at the end of the second year; those in Practice of Medicine, Surgery, and Obstetrics at the end of the third year. The final examinations are conducted, in part at least, in writing.

VI. REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have completed the required courses in practical anatomy and practical chemistry, and, unless the full course of study has been taken in this Department of the University, he must have been engaged in the study of medicine for the period of three full years, including the time spent in attendance upon lectures. He must also have passed satisfactory examinations on all the studies included in the full course of instruction; or, if admitted to advanced standing, he must have attended at least two full courses of medical lectures, *the last of which must be in this Department*, and have passed the required examinations.

In consequence of the prominence given to written examinations through the course, no graduating thesis is required.

Students who, in the first year, are allowed by a special vote of the Faculty to take all the lectures of which two courses are required, and who also take a suitable number of those required but once, may, after examination, obtain permission to pursue their studies with a competent preceptor out of the University during their second year; and after completing the course required by strict attendance during the full third year, may present themselves for examination for the degree at the end of that year.

The Department of Medicine and Surgery is distinct in its organization from every other department of the University, and, under the regulations established by the Regents, the professors are not required to take any part in conducting the ex-

aminations of other students, or in recommending them for graduation, or in signing their certificates or diplomas.

VII. FACILITIES FOR INSTRUCTION.

This Department is abundantly supplied with collections of plates, photographs, models, specimens, preparations, apparatus, and instruments, for the purpose of illustrating the different studies embraced in the course. Additions are made from time to time to these collections by special appropriations of the Board of Regents, so that the Faculty are able to adopt every new method of illustration, and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

The museums of Professors Ford and Sager, embracing several thousand specimens, which are the result of many year's labor in the collection and preparation of materials intended to aid directly in teaching, have now become the property of the University, and are used in the daily work of the class-rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, the various changes that occur from infancy to old age, and the processes of first and second dentition; dissections, general and partial, of the vascular, nervous, and muscular systems, both normal and abnormal; models of various portions of the body in wax, papier maché, and plaster, illustrating morbid growths, skin diseases, etc.; preparations in the comparative embryology, neurology, and craniology of the vertebrata; human embryology, and anatomy and pathology of the diseases of women, etc. The collections of monstrosities, both single and double, of man and the lower animals, is one of the largest in the United States. There have been added recently over three hundred preparations in human and comparative anatomy, normal and pathological. The number of new and valuable specimens is constantly increasing.

The collections illustrative of *Materia Medica* consist of a very complete collection of crude organic medicinal substances, finely displayed and arranged according to their order in Natural History; also about one thousand other specimens of simple

mineral and vegetable substances, and pharmaceutical and official preparations, active principles, etc., arranged in groups convenient for study. Medical Botany is further illustrated by several hundred large finely-colored plates.

The Anatomical Law of Michigan furnishes, without embarrassment, an ample supply of material for the purposes of practical anatomy, and for all students who desire it and have completed the requirements in descriptive and practical anatomy, a course in operative surgery upon the cadaver is offered.

In their first year, students have the opportunity, under competent instruction, to study comparative anatomy and physiology practically by dissecting various animals. While thus becoming familiar with structures and tissues, they also acquire dexterity in the use of instruments preparatory to work upon the human cadaver.

The equipment of the Physiological Laboratory contains most of the more essential instruments used in physiological demonstration and research. The apparatus is all new and is of the highest finish and accuracy. The list of instruments includes: five *du Bois* induction coils; two rotating cylinders with clock-work; one *Ludwig's* kymographion; tuning forks for electrical interruption; one adjustable electrical interrupter with clock-work; *Fick's* spring-kymograph; recording chronographs; *Browning* spectroscope; *Thompson's* galvanometer; *Roy-Gaskell* heart tonometer; *Zeiss* microscopes; foot lathe with working tools; etc., etc. The laboratory is open daily for physiological experiment and research. See also page 26.

The University Hospital, with pavilion buildings of sufficient capacity for a large number of patients, is thoroughly equipped, and is in the immediate charge of a competent house surgeon and physician and an experienced matron. The whole is placed under the direction of the Faculty, who attend regularly upon the patients (each upon such cases as come within his special department) and give clinical instruction in the wards to advanced students. In connection with the Hospital there is a spacious clinical amphitheatre; and there are also separate wards for the reception and treatment of patients

affected with diseases of the eye and ear. Students are required to take the history and keep a record of patients, and, under proper supervision, are offered an opportunity of personally examining the patients. It is the aim of the Faculty to make instruction in this branch of medicine systematic and thorough, and this they are enabled to do by an abundance of interesting cases which present themselves in the clinic every year.

The Hospital is kept open for patients applying from this and other States, during the whole college year, the only restriction being that no contagious diseases are admitted. Under the present organization, patients are much better accommodated, and clinical instruction is rendered more systematic and efficient than was formerly possible. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services of the Faculty being rendered gratuitously to those made available for clinical instruction.

Patients who desire to enter the Hospital are requested to write to the Resident Physician to ascertain if there is room for their accommodation, and to obtain a circular giving more fully the rules governing admission.

About fifteen hundred cases are annually received into the Hospital, examined, prescribed for, and operated upon in the presence of the students. A large portion of these are from a distance and are cases of more than common interest, including many cases of chronic diseases of the lungs, the heart, and the nervous system, and of the most important operations in the surgical, ophthalmological, and gynæcological departments.

In addition to the foregoing aids to study, the students in medicine have free access to the general botanical, zoölogical, and geological cabinets of the University, which are estimated to contain 255,000 specimens. The General Library, containing about 49,000 volumes, of which 3,447 are medical works, is also open to all students. A complete catalogue of the library, arranged both by authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe are taken and kept on file. See also page 61.

VIII. TEXT-BOOKS AND BOOKS OF REFERENCE.

The books mentioned in the following list are standard authorities, and will form a good nucleus for a medical library. Any one of those mentioned in each department will answer the necessities of the student; and, whenever a preference exists, it is given to the one first in order on the list:

MEDICAL DICTIONARY.—Dunlinson or Thomas.

ANATOMY.—Quain; Gray; Heitzmann; Darling; Ford's Questions on Anatomy, Histology, and Physiology; Weiss's Practical Human Anatomy; Ranney's Anatomy of Nervous System.

HISTOLOGY.—Stowell's Manual; Klein; Stricker.

PHYSIOLOGY.—First Year—Martin's Human Body; Kirkes's Handbook of Physiology; Yeo's Manual of Physiology. Second Year—Foster's Text-book of Physiology; Landois and Stirling's Physiology.

CHEMISTRY.—*General Chemistry.* Miller's Chemical Physics; Miller's Inorganic Chemistry; Bloxam's Chemistry; Fownes's Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry.

MATERIA MEDICA AND THERAPEUTICS.—H. C. Wood, Jr.; Stillé; Bartholow; Ringer.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Green; Wagner; Paget; Williams's Principles. *For Reference.*—Rokitansky; Virchow.

OBSTETRICS.—Parvin; Lusk; Playfair; Leishman; Galabin. *For Reference.*—Schroeder; Cazeaux; Hodge. *Special Subjects.*—Tanner on Pregnancy; Barnes on Obstetric Operations; Elliott's Obstetric Clinic; Barker on Puerperal Diseases.

DISEASES OF WOMEN.—Thomas; Emmet; Goodell's Lessons in Gynecology; Byford; Mundé's Minor Surgical Gynecology. *Special Subjects.*—Tilt on Uterine Therapeutics; Klob on Pathological Anatomy of the Female Sexual Organs; Peaslee on Ovariectomy; Sims on Uterine Surgery; Emmet on Vesico-Vaginal Fistula; Skene on Diseases of the Bladder and Urethra.

DISEASES OF CHILDREN.—J. L. Smith; Vogel; Tanner; Meigs and Pepper. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; Combe on the Management of Infancy; Routh on Infant Feeding; Holmes, or Guersant, on the Surgical Diseases of Children.

PRACTICE OF MEDICINE.—Palmer's Science and Practice of Medicine. *Special Subjects and for Reference.*—Williams on Consumption; Murchison on the Liver; DaCosta, or Finlayson, on Medical Diagnosis; Loomis on Physical Diagnosis; Reynolds's System of Medicine; Ziemssen's Cyclopædia.

DISEASES OF THE SKIN.—Duhring; Robinson. *For Reference.*—Bulkley on Eczema and Acne.

SURGERY.—Erichsen; Hamilton; Druitt. *Special Subjects.*—Billroth on Surgical Pathology; Hamilton on Fractures and Dislocations; Bumstead on Venereal Diseases; Ranney on Surgical Diagnosis; Sayre on Club Foot; Sir Henry Thompson, or Gouley, on Genito-Urinary Organs; C. Henri Leonard on Bandaging. *In Minor Surgery and Surgical Appliances.*—Bell; Le Gros Clark; Annandale; Wales; Sargent. *For Reference.*—Gross's System of Surgery; Agnew; Holmes's System of Surgery.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler; Schweigger; Saelberg Wells; Loring on the Ophthalmoscope. *On the Ear.*—Roosa; Burnett; Pomeroy; Hartmann.

The student who begins a course of reading without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, anatomy, physiology, and general and medical chemistry; and advancing to the other studies, to select one of the first-mentioned text-books in each department, passing to the "*Special Subjects*" only when near the completion of the course, or as he may desire for particular reasons to become more fully informed on them.

IX. FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *twenty dollars*, which covers all the expense for practical anatomy during the whole college course, is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the Chemical Laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the Histological Laboratory. This charge is subject to change by the Regents as may be

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

found necessary. A charge of *one dollar* is made to students who take the course in Electro-Therapeutics.

The professors make no charge for lecture tickets, nor are there any additional charges for the recitations conducted by the assistants to the several professors.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this Department, be permitted such attendance on the payment of the matriculation fee only.

The total amount of fees paid to the University during the whole three years' course, for matriculation, incidental expenses, materials used, and diploma, is, for Michigan students, about \$139.00; and for others, about \$184.00; varying a little with the student's actual laboratory expenses.

For additional information in regard to expenses, see pages 27 and 28.

Letters of inquiry may be addressed to the Secretary of the Faculty of the Department of Medicine and Surgery, Ann Arbor, Michigan.

Department of Law.

In this Department it is the constant endeavor of the Faculty to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country. No effort will be spared to make the Department deserve in the future a prosperity like that it has hitherto enjoyed. A spacious building is devoted to its accommodation, with ample debating and society rooms, and in every respect the conveniences of the Department are exceptionally good.

I. IMPROVED AND EXTENDED COURSE OF INSTRUCTION.

The course of instruction has been extended recently to two years of nine months each. The lengthening of the course of study in the Department was due to the sincere conviction that the standard of legal education should be raised, and that students should be able to obtain a more thorough and extended preparation for the practice of law. It is the aim of this Department to elevate the standard of legal education and fitness for the legal profession.

By the extension of the term so as to include the entire college year, opportunity is afforded the student in this Department, without additional expense, to attend some of the lectures delivered in the Department of Literature, Science, and the Arts. These lectures will be found in a high degree useful and important, and students are encouraged to give attention to them, and especially to the constitutional history of this country and of England.

When the Department was established, the course of instruction was so arranged that the members of both classes heard the same lectures, receiving to that extent their instruction in

common. This method of instruction has, however, been abandoned, and instead thereof a graded course of instruction has been adopted, thereby promoting the efficiency of the Department, and making possible a more scientific teaching of law.

The following more specific statements indicate the course of instruction in the Department of Law, and the subjects upon which students are required to hear lectures and pass satisfactory examinations.

II. THE LECTURE COURSE.

It is the design of the Department to give instruction that shall fit students for practice in any part of the country. The course of instruction embraces the several branches of Constitutional, International, Maritime, Commercial, and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and includes such instruction in Common Law and Equity Pleading, Evidence, and Practice, as will lay a substantial foundation for practice in all departments of law. Instruction is also given in the History of the Common Law.

Lectures are delivered as follows:

TO THE JUNIOR CLASS.

CRIMINAL LAW, AND MEDICAL QUESTIONS BEARING ON IT, *Professor Rogers.*

TORTS, *Professor Rogers.*

EVIDENCE, *Professor Griffin.*

PERSONAL PROPERTY AND TITLE THERETO, BY GIFT, SALE, MORTGAGE, AND ASSIGNMENT, *Professor Griffin.*

CONTRACTS, *Professor Wells.*

AGENCY, *Professor Wells.*

PARTNERSHIP, *Professor Wells.*

THE LAW OF REAL PROPERTY, *Mr. Thompson.*

EASEMENTS, *Mr. Thompson.*

TO THE SENIOR CLASS.

THE LAW OF THE DOMESTIC RELATIONS, *Professor Rogers.*

WILLS, THEIR EXECUTION, REVOCATION, AND CONSTRUCTION, *Professor Rogers.*

THE ADMINISTRATION AND DISTRIBUTION OF ESTATES OF DECEASED PERSONS, *Professor Rogers.*

JURISPRUDENCE OF THE UNITED STATES, *Professor Griffin.*

INTERNATIONAL LAW, *Professor Griffin.*

MINING LAW, *Professor Griffin.*

CONSTITUTIONAL LAW, *Professor Wells.*

BILLS AND NOTES, AND COMMERCIAL LAW GENERALLY, *Professor Wells.*

THE LAW OF PRIVATE AND MUNICIPAL CORPORATIONS, *Professor Wells.*

PRACTICE IN CASES AT LAW, *Assistant Professor Knowlton.*

EQUITY JURISPRUDENCE, AND EQUITY PLEADING AND PROCEDURE,
Doctor Bigelow.

ADMIRALTY LAW, *Judge Brown.*

HISTORY OF THE COMMON LAW, *Doctor Hammond.*

SPECIAL HEADS OF MEDICAL JURISPRUDENCE, *Doctor Dunster.*

TOXICOLOGY IN ITS LEGAL RELATIONS, *Doctor Vaughan.*

LEGAL MICROSCOPY, *Doctor Stowell.*

Members of the junior class are not allowed to attend the lectures delivered to the senior class. The work assigned is fully sufficient to occupy their attention during the year, and it would only be confusing for them to attempt to hear lectures on subjects additional to those assigned to them. But the members of the senior class, inasmuch as they have been over the subjects of the junior year, are encouraged to attend the lectures delivered to the junior class, so far as they may be able so to do. Such a review of previous work, it is thought, will help to establish the principles of the law more firmly in the memory of the student.

The lectures to the senior class commence at ten and one-half o'clock A. M., and those to the junior class at two and one-half o'clock P. M.

III. TEXT-BOOK INSTRUCTION.

In addition to the instruction by lectures is the instruction by text-books.

The members of the junior class are required to attend daily recitations in Cooley's edition of Blackstone's Commentaries, Anson on Contracts, and Stephen on Pleading.

Students who come from Code States are also expected to attend regular recitations in Bliss on Code Pleading, and they will find the instruction thus obtained invaluable in their subsequent practice. Students from States where the reformed procedure has not been introduced, may or may not, at their option, attend such recitations. But students from Code States are expected to attend the recitations in Stephen on Pleading, as well

as in Bliss, inasmuch as the works on common law pleading are not superseded by the codes, and it is thought that a careful study of such works is the best preparation for the pleader, whether he practice under the old or the new procedure.

The members of the senior class are expected to attend recitations in Hutchinson on Carriers.

All of the above text-book work is under the direction of Assistant Professor Knowlton.

IV. THE STUDY OF LEADING CASES.

As much benefit can be derived from a proper study of what are known as Leading Cases, and inasmuch as it is desirable that students should be familiar with the more important of these cases, they are requested to purchase "Indermaur's Common Law Cases." They are expected to make themselves familiar with the cases contained in that work, and they are examined upon them during the year. This work is under the direction of Professor Rogers.

V. MEDICAL JURISPRUDENCE.

It has been thought desirable that students of law should receive instruction in certain branches of medical jurisprudence, and arrangements have accordingly been made for the delivery of a course of lectures on certain medico-legal subjects which are of especial interest to the legal profession. These lectures are delivered during the second semester, and to the members of the senior class only.

Professor Dunster lectures on some special heads of medical jurisprudence, including signs and symptoms of pregnancy, abortion and premature labor, duration of gestation, puerperal insanity, infanticide, and rape.

The lectures on legal microscopy by Professor Stowell consist of a discussion of those subjects, liable to come before the courts, where the microscope can be employed as an aid in arriving at a correct diagnosis;—as in the detection and identification of blood stains, of mineral and vegetable poisons, of the complex tissues, of hair, of commercial fibres, etc.

The lectures on toxicology by Professor Vaughan cover the subject of poisons in its medico-legal relations.

VI. ELOCUTION.

Arrangements have been made for giving instruction in elocution to the students of law, to members of both classes. An advanced course has been arranged for the members of the senior class, and continues throughout the second semester.

VII. EXAMINATIONS.

The members of both classes are examined daily throughout the year on the lectures delivered. At the end of the first year the members of the junior class are subjected to an oral and written examination on the lectures delivered during the year, and their promotion to the senior class is dependent on the manner in which they pass such examination. The examination of the junior class at the end of the year is final on the subjects of that year.

At the end of the second year the members of the senior class are required to pass satisfactory oral and written examinations on the subjects lectured on during the senior year.

Satisfactory examinations must also be passed by the members of both classes in the text-books used for the purposes of instruction.

In the case of written examinations the student is required to certify on honor that previous to the examination he had no knowledge as to the questions to be propounded, and that he has received no assistance in making his answers thereto, and has given no assistance to others.

The Faculty, however, do not hesitate to drop a student from the rolls at any time during the year, on becoming satisfied that such student is neglecting work and not conforming to the requirements of this Department.

VIII. CONSTITUTIONAL HISTORY AND POLITICAL SCIENCE.

It seems now to be conceded not only that the law should be studied in a law school rather than in an office, but that the law school should be connected with a university, where students may avail themselves of opportunities for the study of such other branches of learning as are of allied significance.

It is believed that great benefit may be derived by students in the Department of Law from the instruction given on kindred subjects in the School of Political Science. Arrangements have therefore been made by means of which students in the Department of Law, having first obtained permission from the Law Faculty, may, on special application to the Dean of the School of Political Science,* attend any or all of the lectures delivered in that School, free of charge. The Law Faculty, however, reserve the right to require such students to give up any or all studies they may be pursuing in the School of Political Science, whenever it appears that the pursuit of these studies is attended with an unsatisfactory performance of the duties required in the Department of Law. Among the subjects upon which instruction is there given may be named the following as being particularly suitable for law students; the Political and Constitutional History of England; the Political and Constitutional History of the United States; American Constitutional Law; the Political and Social History of Europe during the Middle Ages; the Elements of International Law; the History of Treaties; the Roman Law. Instruction is also given in that School upon social, sanitary, and the economic sciences. Compare pages 48, 49, and 51.

IX. REQUIREMENTS FOR ADMISSION.

Any person is at liberty to matriculate in the Department of Law, and have a seat assigned him for attendance upon the lectures.

If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age, and must pass such examination in respect to general education as shall satisfy the Faculty that his educational attainments are such as will justify his entering upon the practice of the law when his legal studies are completed. Examinations will be held in the Lecture Room, in the Law Building, at 2 p. m., on Thursday and Friday, September 27th and 28th, 1888. The examination on the first of these days will

* During the absence of Professor Thomas M. Cooley, Dean of the School, this application may be made to Professor Richard Hudson.

have reference to general education, and will be on the subjects hereinafter named. The examination on the succeeding day will have reference to legal education, and is confined to candidates for advanced standing. Applicants for advanced standing are required to be present at both of these examinations. Candidates are required to present themselves on these days, as they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Graduates of colleges, and students who have honorably completed an academical or high-school course, and who present a certificate or diploma from the academy or high school will be admitted without preliminary examination. No student who does not present such certificate or diploma will be admitted as a candidate for a degree, until he has passed a satisfactory examination in Arithmetic, Geography, Orthography, English Composition, and the outlines of the History of the United States, and of England. The examination will be conducted in writing, and the papers submitted by the applicants must evince a competent knowledge of English Grammar.

Inasmuch as many present themselves a long time after completing their school education, it may be said that the examination will not be technical. The object is not to ascertain the amount of technical school-book knowledge which the candidate possesses, but the aim is to ascertain the results of his previous training, and his present practical capacity and ability to appreciate the technical study of law.

Before admission to examination, every student is required to present to the Dean of the Law Faculty the Treasurer's receipt for payment of the matriculation fee and annual fee. It is essential, therefore, that a candidate for examination should apply first to the Steward of the University at his office in University Hall, register his name as a student in the Department of Law,

and pay his fees to the Treasurer. (See page 27.) He is then entitled to apply for admission to examination, and in case of rejection, the moneys paid preliminary to such examination will be refunded by the Treasurer.

X. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and each student is expected to occupy, during the session, the seat selected.

XI. CERTIFICATES OF ATTENDANCE.

When a person is connected with the school for a period not entitling him to graduate, he may on application to the Dean of the Faculty, receive, instead of a diploma, an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

XII. REQUIREMENTS FOR GRADUATION.

The degree of Bachelor of Laws will be conferred upon such students as shall pursue the full course of two years in this Department, and pass an approved oral and written examination. It will also be conferred upon those who, having attended another law school for a period equal to one year of our course, or practiced law for one term under a license from the highest court of general jurisdiction in any State, where the requirements for admission to the bar are equal to those in Michigan, shall also pursue one year's course in this Department and pass a like examination.

Special cases depending on previous reading in a law office for a considerable period will be decided by the Faculty on application accompanied by a showing of the facts.

Each candidate for a degree will be required to prepare and deposit with the Faculty, at least one month before graduation, a dissertation, not less than forty folios in length, upon some legal topic selected by himself. The dissertation must be satisfactory in matter, form, and style; and the student presenting it will be examined upon it.

The Faculty require that the theses shall be printed on a

type-writer, or otherwise, and bound, and left with the Department. Special rates can be obtained for doing this work, and two or three dollars will cover the expense of printing and binding. In special cases the Faculty will not insist on this being done, if it should appear to be a burden to a needy student.

XIII. MASTER'S DEGREE.

The degree of Master of Laws is not conferred by the University. But any graduate of the Department of Literature, Science, and the Arts, who is pursuing professional studies in this Department, may, upon proper application to the Law Faculty, and to the Faculty of the Department of Literature, Science, and the Arts, be permitted to become at the same time a candidate for the degree of Master of Arts, Master of Science, Master of Philosophy, or Master of Letters, as the case may be, on condition that his term of residence and study covers two years before he can be admitted to an examination for such a degree. The privilege thus extended to graduates of this University is also extended to graduates of other colleges who can satisfy the Faculty of the Department of Literature, Science, and the Arts, that the courses of study for which they obtained their first degrees are equivalent to the courses of study required for the corresponding degrees at this University. (See page 68.)

It is understood, however, that on complaint of unsatisfactory work in this Department, the Law Faculty will require students of law to discontinue their studies for the Master's degree.

Useful and desirable opportunities are thus afforded to college graduates who wish to study law and at the same time to supplement their professional studies with a broader knowledge of some of the branches taught in the Department of Literature, Science, and the Arts, including those taught in the School of Political Science. They are thereby enabled to enlarge their acquisitions in such branches as will be helpful to them in their professional work.

XIV. MOOT AND CLUB COURTS.

Moot Courts are held from time to time during the term, in

which students discuss cases previously assigned them for that purpose by the professors. These Courts are presided over by the professor lecturing for the day, who, at the conclusion, reviews the arguments and gives his decision upon the points involved. The effort here is to make not merely *theoretical*, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Court is made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and the attention of the Faculty is directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity is afforded all the senior students to participate in this court.

Moot Courts are conducted on the theory that certain facts are true, and that the only subject open to discussion is the rule of law to be applied to them. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings, and draw up a brief in which the rules of law are stated under appropriate divisions and sustained by authorities which he proposes to rely upon in his oral argument. The pleadings are submitted to the professor who lectures on the subject of pleading and practice. He calls the attention of the student to such errors as may exist, and gives such other practical information as he may deem advisable.

Club Courts, too, are organized among the students, to be arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These courts, thus far, have been found alike interesting and useful to those who have participated in them. The Club Courts are open to members of either the senior or junior class, and students are strongly recommended to connect themselves with some one of these organizations. There are also two flourishing literary societies established and conducted by the students of law for purposes of literary culture.

While thus endeavoring to impart legal knowledge, the fact is not lost sight of, that a high moral standard is a most important requisite to a successful and honorable career; and

no pains are spared in impressing this fact upon students, and in inculcating a high tone of professional ethics and action.

XV. PRIOR READING IN LAW.

The Faculty are frequently applied to by letter for advice upon the question whether it is desirable to enter upon the study of law, and acquire some general knowledge of the principles, before admission to the Department. It is somewhat difficult to lay down rules that can be advantageously applied in all cases, but the Faculty are of the opinion that, for the first year at least, more positive benefit is received from lectures, and more positive advancement in law made, by students who, before coming, have read at least the Commentaries of Blackstone, than by those who are beginners here. But the Faculty are aware of the great difficulty experienced by the student in giving proper direction to his reading and investigation at the beginning; and they do not therefore make it a condition of admission that there shall be any prior reading whatever in law. The want of such reading will, doubtless, in many cases, be fully compensated in the aid the beginner may receive here in the outset. It is not often that the student receives the needed assistance except in law schools. The active practitioner, engrossed with the cares of business, cannot—or at least, as proved by experience, does not—furnish the students who place themselves in his charge the attention and assistance essential to give a correct direction to their reading, and to teach them to apply it usefully and aptly in their subsequent professional life. The reading of a student in a law office is practically the study of law by himself, and without assistance; and he neither acquires that familiarity with books and that facility of reference which it is the aim of this Department to assist him in acquiring, nor learns anything of the practical application of legal principles beyond what he may pick up from observation of the practice of his preceptor.

XVI. SPECIAL STUDENTS.

As students come to the University who have been reading law for a considerable period before making application for ad-

mission to the Department of Law, but whose reading has not been sufficiently extensive to bring them within the rule for admission to the senior class, it has been thought best to allow such students to become special students, with the privilege of pursuing a select course of study. They are allowed, under the guidance of the Faculty, to select subjects from the courses of both years.

XVII. THE LAW LIBRARY.

The Law Library contains 9,565 volumes, including the reports of every State in the Union, the reports of the Federal courts, as well as a very excellent collection of the English, Irish, and Canadian reports. In addition to the reports is an extensive collection of treatises on American and English law, and copies of the statutes of the several States and of the United States. By yearly additions the effort is to keep the library supplied with new reports as they are issued, and in this way to make it as good a working library for students as could be desired. The library is open for consultation by students from 8 o'clock a. m. to 12 m., and from 1 p. m. to 5:30 p. m., as well as from 7 p. m. to 9:30 p. m., during the academic year. The library is closed on Saturday afternoons and evenings. Students are not permitted to take the books from the library building, but during the hours named are allowed free access to the same.

The Honorable C. H. Buhl, of Detroit, recently presented to the Law Department of the University what is known as the "Buhl Law Library," consisting of 5,000 volumes of reports and text-books. This generous gift has made the Law Library a most excellent one in which to pursue an extended study of jurisprudence.

The Library was also enriched some years ago by the donation of the valuable law library of the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts.

The Journal of Jurisprudence (Edinburgh), the Law Quarterly Review (London), the American Law Review, the American Law Register, the Criminal Law Magazine, the Albany Law

Journal, the Central Law Journal, and the Federal Reporter, are regularly taken and kept on file.

Students of the Department of Law are also allowed the use of the General Library of the University, which contains 48,971 volumes, and 11,549 unbound pamphlets. (See page 16).

XVIII. TEXT-BOOKS AND BOOKS OF REFERENCE.

Text-books and books of reference are very numerous, and students will find the professors ready to lend them aid in making proper selections. While several copies of each of the leading text-books will be found in the library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. They will find that it will greatly facilitate their studies to have at hand at all times such of the leading text-books as treat of the more important branches of law. By so doing no loss will be incurred as the books will be found essential in subsequent practice. But the only books students are required to provide themselves with are those already named as being used for purposes of text-book instruction.

The books mentioned in the following list may be used to advantage upon the subjects named. As a general thing any one of those mentioned in each department will answer the necessities of the student, and, whenever a preference exists, it is given to the one first in order on the list. But in the department of constitutional history all the writers named may be read, or consulted, as for the most part covering different periods of time.

Constitutional History.—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1860); Stubbs's Constitutional History of England; Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

Constitutional and Statute Law.—Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Sedgwick on Constitutional and Statute

tory Law; Jameson's Constitutional Convention; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

Jurisprudence.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law.—Wheaton's Elements of International Law; Philimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

Roman Law.—Morey's Outlines of Roman Law; Hadley's Introduction to Roman Law; Mackeldey's Roman Law; Mackenzie's Roman Law.

Contracts.—Parsons, Anson, Metcalf, Pollock.

Bailments.—Schouler, Edwards, Story.

Sales.—Benjamin.

Domestic Relations.—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonell on Master and Servant; Simpson on Infants.

Corporations.—Angell and Ames, Field, Morawetz, Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes.—Byles, Chalmers, Parsons; Daniels on Negotiable Instruments.

Torts.—Cooley, Bigelow, Addison.

Evidence.—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton, or Starkie, on Evidence; Rogers on Expert Testimony.

Real Property.—Williams, Washburn, Tiedeman, Boone.

Partnership.—Lindley, Parsons.

Wills and Administration of Estates.—Redfield on Wills; Jarman on Wills (Randolph & Talcott, or Bigelow's edition); Hawkins on Construction of Wills; Williams on Executors.

Common Carriers.—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

Equity.—Pomeroy's or Story's Equity Jurisprudence; Snell's, Bisham's, or Adams's Equity.

Criminal Law.—Harris, Bishop, Wharton, May, Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading.—Stephen, Gould, Chitty; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency.—Evans, Story, Wharton.

Damages.—Sutherland.

Mortgages.—Jones.

Insurance.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

Shipping and Admiralty.—Parsons, Abbott, Conkling, Desty.

Easements.—Goddard, Washburn.

Taxation.—Cooley, Burroughs, Desty.

XIX. FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

The matriculation fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual fee is paid at the beginning of the first year, and of every subsequent year of attendance. For other details of expenses, see pages 27 and 28.

Those who desire any further information concerning this Department, may address letters of inquiry to the Dean of the Department of Law, Ann Arbor, Michigan.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

School of Pharmacy.

This School is organized to give training for service in dispensing pharmacy. It furnishes preparation for the practice of the pharmacist, the general analyst, the manufacturing chemist, and the wholesale druggist. Attention is given to sanitary chemistry, and exercises are required upon adulterations of food as well as medicines. The graduate is qualified for responsibility as the chemist of the medical profession, and of the community. The course also affords a favorable means of mental discipline by systematic work in exact science. Of the laboratories of the University, the chemical, pharmaceutical, and the microscopical laboratories are in constant use by the classes of this school. See pages 22 and 23.

The college year begins October 1, for all students; and closes the last week in June. Students of the first year are released June 15. Admission is not granted at any other time than at the opening of the college year, as students are instructed in classes in progressive order. It is especially difficult to make up for absence in the first week.

I. REQUIREMENTS FOR ADMISSION.

All applicants for admission must be at least sixteen years of age.

It is advisory to obtain at least a year of practical training in a drug store before entering the college course in pharmacy. The practice not gained before entering the School must be obtained after leaving it, as the required work leaves the student no time for an engagement in a drug store during the college year.

Persons over nineteen years of age, who bring evidence of having been engaged in the practice of pharmacy, in some ca-

capacity, for at least two years, may be admitted (for a part or the whole of the course) without an entrance examination; but they shall not be eligible for graduation until they have passed this examination.

Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of collegiate grade, are admitted without examination.

Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following branches:

1. **ENGLISH.**—Each candidate will be examined in the writing of English, correct in orthography, punctuation, the use of capitals, and grammatical construction; in the forms of correspondence; and in the correction of errors.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures. *Algebra.*—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

3. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book. Instead of Latin, German to the extent of a full year's study will be accepted. Those who have a speaking and reading acquaintance with German will be held to an examination in the grammar.

Other applicants will be examined in the following branches:

1. **ENGLISH.**—The same as given above.

2. **MATHEMATICS.**—*Arithmetic.*—The same as given above.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, and the use of Logarithms.

3. **LATIN OR GERMAN.**—The applicant may offer (1) three years of preparation in Latin; or (2) two years in Latin and one year in German; or (3) one year in Latin and two years in German. Those who offer three years of Latin will be examined in the *Grammar*—a thorough preparation in the elements; in *Prose Composition*—Jones's Exercises in Latin Prose Composition, or an equivalent in some other text-book; and in *Reading*—four books of Caesar's Commentaries, and six select Orations of Cicero, or an equivalent amount in some other text-book. Those who offer two years of Latin will be examined as above, except in the Orations of Cicero. Those who offer one year of Latin will be examined on an amount equivalent to Jones's First Latin Book. Those who offer one year of German should have had daily recitations on the Grammar during that time, ac

accompanied by weekly exercises in writing, and the reading of seventy-five pages of some German Reader. Those who offer two years of German should have devoted one year to the reading of some complete work of literary art.

4. **PHYSICS.**—Norton's Natural Philosophy, or an equivalent.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class-Book of Botany; also, an analysis and written description of fifty species of Phanerogams.

TIMES OF EXAMINATIONS.

An examination for admission will be held on Friday and Saturday, June 15 and 16, 1888, and another on Friday and Saturday, September 28 and 29. The examination will begin in each case at 9 A. M., on the first of the two days mentioned. Candidates may take their examination at either of these times, as they prefer.

II. COURSES OF INSTRUCTION.

STUDIES OF THE FIRST YEAR.

1. *Pharmacy.*—History of Pharmacopœias; Metrology and Chemical Problems; Operative Pharmacy and its Physical Principles; the Galenical Preparations; Official Standards and Purity; Heat and its uses.

2. *Chemical Physics and Inorganic Chemistry.*—Recitations from text-book and lectures with experimental illustrations.

3. *Pharmacognosy and Systematic Botany.*—With fresh plants, and with crude drugs and other articles of pharmaceutical commerce, studied in the hands of the student.

4. *Sanitary Science.*—Physiological action of foods and of medicines; Supply of water and air; Defences against contagions; Duties of health officers.

5. *Qualitative Chemical Analysis.*—Preparatory work on chemical notation, solubilities, formation of compounds, and chemical equations. A series of analyses, and the study of oxidation and reduction with a notation by negative and positive bonds.

6. *Pharmacopœial Preparations.*—The minor operations of pharmacy; production of the galenicals, solid and fluid extracts, and scale preparations; chemicals and distillations; extemporaneous pharmacy.

STUDIES OF THE SECOND YEAR.

7. *Materia Medica.*—Medicines, their classification, history, physiological effect, and doses. Prescription writing, language, and latinity; prescription reading from actual files of the pharmacy.

8. *Practical Pharmacognosy*.—Recognition of crude drugs, chemicals, and preparations, in the hands of the student.

9. *Microscopical Botany*.—Structural botany of drugs, with drawings from the microscope by the student; identification of powders; detection of adulterations.

10. *Crystallography*.—Systematic crystallography applied to the recognition of chemicals.

11. *Organic Chemistry*.—The systematic chemistry of the carbon compounds, with experimental illustrations.

12. *Quantitative Chemical Analysis*.—(1) Specific gravity; (2) volumetric determinations; (3) gravimetric determinations; (4) gravimetric separations; (5) water analysis.

13. *Proximate Organic Analysis*.—Tests of identity; methods of separation; analysis of "secret medicines;" drug assays; valuation of foods.

14. *Pharmacy*.—Of inorganic and organic materials, in commercial sources, manufacture, uses, tests, and standards of strength and purity.

15. *Toxicology*.—Analyses for evidences of poisoning; recovery from the body. Legal procedures. The use of antidotes.

16. *Analysis of Urine*.—Normal and abnormal, by chemical, microscopical, and volumetric methods. Physiological and pathological indications.

HOURS OF COLLEGE WORK.

FIRST YEAR—FIRST SEMESTER.

HOURS.

- 8¼ to 9¼ Course 5. Recitations and lectures. Daily.
 9¼ to 10¼ Course 1. Lectures and recitations. Daily.
 10½ to 11½ Course 3. Wednesday and Friday.
 10½ to 11¼ Course 4. Lectures. Tuesday and Thursday.
 1 to 5 Course 5. Laboratory practice. Daily.
 5 to 6 Course 2. Lectures. Monday, Wednesday, and Friday.

SECOND SEMESTER.

(From beginning to March recess.)

- 8¼ to 9¼ Course 6. Recitations. Monday, Wednesday, and Friday.
 9¼ to 10¼ Course 5. Lectures and recitations. Daily.
 10½ to 11½ Course 3. Wednesday and Friday.
 1 to 6 Course 5. Laboratory practice. Daily.

(From March recess to end of semester.)

- 10½ to 11½ Course 3. Lectures and practical study in botany. Monday, Wednesday, and Friday.
 10½ to 12¼ Course 3. Practical studies in museum. Tuesday and Thursday. (Two sections.)
 11½ to 12¼ Course 6. Lectures and recitations. Monday, Wednesday, and Friday.
 1 to 6 Course 6. Laboratory work. Daily.

SECOND YEAR—FIRST SEMESTER.

(From beginning to Christmas vacation.)

- 8½ to 11½ Course 9. Laboratory. Twice a week.
 9½ to 10½ Course 9. Lecture. Friday.
 10½ to 11½ Course 11. Lectures. Monday, Wednesday, and Friday.
 10½ to 12½ Course 10. Lectures and practical study. Tuesday and Thursday. (Seven weeks.)
 11½ to 12½ Course 12. Lectures and recitations. Wednesday and Friday.
 1 to 5 Course 12. Laboratory practice. Daily.
 5 to 6 Course 7. Recitations. Tuesday and Thursday.

(From Christmas vacation to end of semester.)

- 8½ to 11½ Course 9. Laboratory. Twice a week.
 9½ to 10½ Course 9. Lecture. Friday.
 10½ to 11½ Course 11. Lectures. Monday, Wednesday, and Friday.
 1 to 2 Course 18. Lectures. Monday, Wednesday, and Friday.
 1 to 5 Course 16. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Tuesday and Thursday.

SECOND SEMESTER.

(From beginning to March recess.)

- 8½ to 10½ Course 8. Lessons in museum. Tuesday and Thursday. (Two sections.)
 8½ to 10½ Thesis. Reading in Library. Monday, Wednesday, and Friday.
 10½ to 11½ Course 14. Lectures and recitations. Monday, Wednesday, and Friday.
 1 to 6 Course 15. Lectures and laboratory work. Daily.
 5 to 6 Course 7. Recitations. Tuesday and Thursday.

(From March recess to end of semester.)

- 8½ to 9½ Course 8. In museum.
 9½ to 10½ Course 14. Lectures and recitations. Daily.
 10½ to 12½ Thesis. Reading in Library. Daily.
 1 to 6 Course 13. Lectures and laboratory work. Daily till middle of May.
 1 to 6 Thesis. Laboratory work. Daily after middle of May.

III. EXAMINATIONS.

In each of the courses of instruction enumerated (1 to 16) an examination is held at the time the work of the course is completed by the class. For the students of the first year the principal examinations are held in February or March, and in June. For the second year, examinations are held in December, in February, in March, in May, and in June.

After the examination concluding any course of study, the result is reported to the Faculty, and each student enrolled in the class is recorded as being Passed, Conditionally Passed, Provisionally Passed, Not Passed, or Absent, and he receives a corresponding certificate. The record is by no means based wholly upon the examination, but upon (1) standing in recitations throughout the course, (2) diligence and success in the labora-

tory work, and (3) standing in the examination. If "Passed," the student receives credit for the completion of the study reported upon. If "Conditionally Passed," he must make up the condition imposed. A record of "Not Passed" requires the student to go over the regular exercises of the study again. A student "Provisionally Passed" is transferred from the immediate charge of the instructor to that of the Faculty, who will withhold credit until better scholarship is attained in other studies. A record of Provisionally Passed may be changed by the Faculty to a record of Passed, Conditionally Passed, or Not Passed, whenever such change shall be justified by the scholarship of the student in his studies in the school. Whenever the Faculty is satisfied that a student does not fulfil the purpose of his studies, he is informed, and his parents or guardians are advised that he should leave the school. If the advice be not regarded it becomes the duty of the Faculty to take mandatory action.

IV. REQUIREMENTS FOR GRADUATION.

The degree of Pharmaceutical Chemist is conferred upon students who have completed the courses of required study, have obtained credit for examinations in these courses in the manner above stated, and have presented a satisfactory thesis.

The thesis must embody the results of research by the student under the direction of the Faculty. The subject is to be selected as early as the first of March. The investigations may consist in the determination of constants of nature, the correction of chemical formulæ and reactions, the chemical and microbotanical analysis of plants, the trial of methods of analysis or manufacture, the exposure of adulterations and concealed constituents, the collection of a cabinet, the compilation of a bibliographic index, or research in any branch of pharmaceutical chemistry. A comparison of authorities must be made, and the references given.

Experience in the business of pharmacy is not made a requirement for a degree.

V. POST-GRADUATE STUDIES AND A HIGHER DEGREE.

Extended facilities for advanced studies under instruction

are given to graduates who take an additional year in the school. These facilities are adapted to preparation for service in manufacturing chemistry and pharmacy, or in any branch of analytical chemistry. The student elects such laboratory courses and other studies as will be most helpful to him in responsibilities for which he desires to be qualified. Additional study in the Department of Literature, Science, and the Arts may be elected, if the Faculty find such additional work advisory. (See pages 53-55 for the courses in analytical and organic chemistry given in that department.) The following are among the available courses open to graduates:

1. *Quantitative Analysis*.—Advanced quantitative work in any direction: iron and steel analysis, valuation of fertilizers, mineral waters, brines, etc.

2. *Organic Analysis*.—Proximate analysis, detection of adulterations, assays of drugs, valuation of foods, sanitary chemistry,—laboratory work and reading in the library. Ultimate organic analysis and preparations,—an organized course.

3. *Purification of Chemicals*.—An organized course of laboratory work, furnishing pure chemicals for use.

4. *Physiological Chemistry*.—A laboratory course. *Pharmacology*.—Experimental work.

5. *Assaying of Ores*.—A course in class. Blow-pipe analysis of minerals,—a defined course. *Metallurgy*.—Lectures.

6. *Experimental Researches*.—In manufacturing invention; in analytical methods; in the pure sciences. Bibliography of pharmaceutical chemistry.

A second degree is offered to resident graduates of this School upon the following requirements, viz., the accomplishment of original research, of an extent representing the average work of a full college year, and of sufficient ability and faithfulness. Applications are accepted by the Faculty from those who have already shown that they are adapted to engage successfully in investigations. A full record of the work, with citations of authorities, in form for publication, is required. Upon completion of the requirements, the degree of Master of Pharmacy is conferred.

VI. TEXT-BOOKS AND BOOKS OF REFERENCE.

TEXT-BOOKS.

First Year.—In General Chemistry, the work of Roscoe and Schor-

lemmer is advised, and either Miller's Chemical Physics or Deschanel's Heat and Electricity. In Qualitative Analysis, Douglas and Prescott. In Pharmacy, the U. S. Pharmacopœia and Remington's Practice. In Botany, Gray's Lessons and Manual. In Pharmacognosy, Maisch's Organic Materia Medica. It is very desirable to have either the National Dispensatory, or the United States Dispensatory.

Second Year.—In Materia Medica, Farquarson. On Prescription Writing, Gerrish. In Quantitative Analysis, Cheever's Select Methods. In Organic Chemistry, Remsen. In Organic Analysis, Prescott. In Physiological Chemistry, Vaughan. Lyon's Pharmaceutical Assaying is advised.

Students who study in the same room may unite in the use of the dispensatory, and the works on general chemistry and chemical physics.

BOOKS OF REFERENCE.

These are provided in the General Library of the University, which embraces the library of the School of Pharmacy. All the important repositories of chemistry and pharmacy, including the principal periodicals in complete sets, and the latest works of reference, are accessible to the student, and are in use for original research. During the time devoted to the preparation of the theses, students have direct access to an alcove supplied with about five hundred volumes of pharmaceutical literature, and other works can be obtained from the book-room by calling for them.

VII. FEES AND EXPENSES.

For full information in regard to University fees and other expenses see pages 27 and 28.

Letters of inquiry may be addressed to the Dean of the School of Pharmacy, Ann Arbor, Michigan. A register of residences and occupations of the alumni, constituting a full professional directory, is given in the special Annual Announcement of the School, which can be obtained on application to the Dean.

Homœopathic Medical College.

I. INTRODUCTION.

By an act of the Legislature in 1875 the Homœopathic Medical College was established as a Department of the University. The friends of homœopathy everywhere will be gratified to know that since the establishment of the College wise and liberal provisions have been made by successive legislatures for its maintenance and success. The object sought to be fulfilled by its establishment, namely, the thorough instruction of students in all subjects which pertain to medical science and art, and especially to the principles and art of homœopathy, has, it is believed, been satisfactorily accomplished.

The recent reorganization of the Faculty, on a permanent basis, will be an assurance to the profession in Michigan and to the friends and patrons of the College in other States, that the work commenced here in 1875 is not permitted to drag. With a determination on the part of the Faculty to do all in their power to place the Homœopathic Medical College upon a basis which shall insure its continued and increased usefulness to the profession at large, and with the unusual attractions offered by the University itself to all who desire to obtain a sound and broad education, the future of this institution is one of great promise. The Faculty ask for the cordial support of the medical profession, and earnestly invite the attention of medical students to the inducements here held out.

II. REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be at least eighteen years of age, must present to the Faculty satisfactory evidence of a good moral character, and must have sufficient primary education to make good use of the advantages offered. To this

end, students who are graduates of some accredited college, academy, or high school, or who possess a teacher's certificate, qualifying them to teach in the common schools of the State in which they reside, will be admitted to this College upon presentation of such certificate to the Secretary of the Faculty. Those not presenting such certificates must submit to an examination, in writing, in the branches of a common-school English education.

ADMISSION OF WOMEN.

Women are admitted to this College, as to all other departments of the University, on the same conditions as men.

MATRICULATION EXAMINATION.

Examinations will be held at 2 P. M., on Friday and Saturday, September 28 and 29, 1888. Candidates are required to present themselves on one of these days, and they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for candidates to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty; but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination. Certificates of time are given only for the actual period of attendance.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one college year, and who possess superior qualifications, may be admitted, on examination, to advanced standing, and may attend such lectures and studies as shall be designated for their special

course; but no student will be admitted to the final examination for a degree who does not furnish satisfactory evidence of having studied medicine at least three college years, and who has not attended all the lectures required in the schedule of studies. The student is, however, most earnestly advised, even if he be able to pass a fair examination upon the studies of the first year, to spend the whole three years in this College, pursuing systematically the regular graded course. Each year furnishes a smaller percentage of applicants for advanced standing.

Students who have attended lectures in medical colleges in which homœopathic materia medica and therapeutics are not taught, and who wish to enter this College with a view of taking its degree, are not admitted to advanced standing without first giving evidence of possessing the requisite acquaintance with homœopathic materia medica and therapeutics.

III. ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and according to the class they are to enter; and each student is expected to occupy, during the session, the seat selected. In the advanced lectures the graduating class, by courtesy, are allowed the privilege of the seats nearest the operating table and lecture desk. The same rule applies to the selection of seats in the Department of Medicine and Surgery.

IV. COURSE OF INSTRUCTION.

SURGERY.—A complete course of lectures is given to freshmen on Minor Surgery and Bandaging.

The senior and junior classes are combined, and listen to a complete course of lectures on Operative Surgery, Fractures, and Dislocations, and on the Principles of Surgery.

Candidates for graduation are required to demonstrate their knowledge of Operative Surgery by operations on the cadaver, a requisite number being provided by the authorities without expense to the class.

The chair of surgery has an assistant, under whose direction attendants are allowed to make the necessary preparations

for operations and to assist, when assistance is required. Advanced students are allowed to treat patients operated upon under the immediate supervision of the surgeon in charge.

MATERIA MEDICA.—The course in *Materia Medica* and Therapeutics embraces the study of the toxic and physiological action of remedies, of experiments made upon the healthy, and a careful study of symptomatology. Every effort is made to present in its entirety each drug discussed, and to convey to the student a clear apprehension of its individuality. The making of drug-provings, critical analyses of provings made, and an inquiry into the relative merits of different methods of instituting drug-provings are also had. Provings upon the healthy are made by members of the class, under the instruction of the professor of *materia medica*.

The regular course consists of 108 lectures, so arranged that the classes, while listening to the same lectures, do separate work. The freshmen take a course of thirty-six hours in pharmacy, chiefly practical, in charge of the assistant to the chair of *materia medica*. The different classes are quizzed by the assistant, at least once a week, upon the lectures heard during the preceding week, and each class is examined in writing at the close of each semester.

OBSTETRICS, GYNÆCOLOGY, AND PÆDOLOGY.—It is the object of the Faculty so to arrange the course in this department, that the freshmen and junior classes may be permitted to attend as many of the lectures as can be profitably studied with their knowledge of the primary branches of medicine; the course is thus arranged in order that the first and second year students may profit by the abundant clinical material provided. Gynæcological operations are, as a rule, performed in the presence of the entire class, but members of the senior class, or sections thereof, are accorded the first privilege of witnessing or assisting in any operation when it is impracticable to perform the same in the presence of the entire class. In accordance with the graded course system, separate quizzes and examinations are given from time to time to the several classes and credits rendered to them accordingly. The close proximity of Ann Arbor

to Detroit makes it possible to secure abundant obstetrical material at a comparatively low cost.

OPHTHALMOLOGY AND OTOTOLOGY.—Regular lectures on this important specialty are given during the term, amply illustrated from the abundance of clinical material at the disposal of the Faculty. The eye-and-ear clinic has assumed sufficiently large proportions to form one of the most interesting features of the clinical work, and to afford the class every facility for a thorough practical study of all the diseases of the eye and ear which come under the observation of the physician.

THEORY AND PRACTICE OF MEDICINE.—The course in Theory and Practice embodies a thorough discussion of the general subjects belonging to this chair, of the principles underlying homœopathic practice, and of their practical application. Due attention is given to pathology, diagnosis, and the divisions of the science of medicine. No pains are spared to make the student thoroughly familiar with homœopathic practice, and with the latest advances made in medicine.

The lectures are fully illustrated by the medical clinic, which is further utilized for giving special instruction in physical diagnosis and in the use of the various diagnostic instruments now in vogue. Cases in the hospital are assigned, from time to time, to the care of members of the senior class, thus affording them abundant opportunities for gaining bedside experience in the diagnosis and treatment of disease.

INSTITUTES OF HOMŒOPATHY.—In order to furnish thorough instruction in the distinctive features of homœopathic teaching and practice, a full course of lectures in the Institutes of Homœopathy is given by the professor of materia medica. These lectures consist of a careful study of the Organon of Samuel Hahnemann, and of the principles of homœopathy as recognized by the authorities. This course will hereafter be obligatory upon all classes. The Faculty are so fully convinced of the necessity of such a course that they have urged upon the inter-collegiate committee of the American Institute of Homœopathy the wisdom of making provision for it in every college represented in the Institute.

SPECIAL COURSES.—Two special courses have been established, one in Physiological and Pathological Chemistry, and another in Toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in Qualitative and Quantitative Analysis, and the special examination of foods, and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in quantitative analysis and in pharmaceutical preparations are also open to students of medicine who may desire such special training.

The general plan of study covering the entire course of three years is given in the schedule on pages 139 and 140.

The students of the Homœopathic Medical College receive instruction in all branches not therein provided for from the respective professors in the Department of Medicine and Surgery, and, in those branches, are subjected to the same rules, regulations, and examinations, as the students of that department.

Lectures are delivered daily; and frequent examinations by the assistants to the several chairs are held. The surgical, medical, and gynæcological clinics are held twice a week, at which times examinations of patients are made by the professors in charge, or by students under the direction of the professors, prescriptions given, and surgical operations performed in the presence of the class. Owing to the abundance of clinical material, the eye-and-ear clinic is held on separate days, of which the profession throughout the State will be duly notified. Until otherwise announced, the eye-and-ear clinic will be held on Monday and Friday; other clinics on Wednesday and Saturday forenoon.

EXAMINATIONS.

At the end of each semester, examinations are held by the several professors, or their assistants, on all subjects previously

SCHEDULE OF STUDIES.

SUBJECTS.	Number of Courses required.	Number of Lectures in each Course.	Number of Lectures to be attended.	REMARKS.
Anatomy—Descriptive.....	2	90	180	*Delivered in Anatomical Amphitheatre.
Anatomy—Surgical.....	1	36	36	*One lecture a week in General Lecture-room, to Senior class.
Embryology—Comparative ..	1	20	20	*In Anatomical Amphitheatre, with illustrations.
Anatomy—Practical.....	1	---	---	*Requiring twelve weeks of afternoon work in the Dissecting Rooms.
Physiology.....	2	80	160	*Didactic Lectures in Amphitheatre, with illustrations.
Physiology.....	---	---	---	*A special course of Laboratory work in Physiology is offered to the second year's class. (Optional).
Study of Bacteria.....	1	10	10	*In General Lecture-room.
Histology and Microscopy ..	1	40	40	*In General Lecture-room.
Histology, with practical use of Microscope, Mounting, etc	---	---	---	*In sections in the Histological Laboratory. Fifteen lessons of afternoon work. In Amphitheatre, with illustrations.
Botany.....	1	20	20	*In Amphitheatre, with illustrations.
Pathological Anatomy.....	1	30	30	*In Amphitheatre, with illustrations.
General Chemistry.....	2	48	96	*In General Lecture-room, with illustrations.
Organic Chemistry.....	2	25	50	*In General Lecture-room.
Pathological Chemistry.....	---	---	---	†Continuing through college year. (Optional).
Qualitative Chemistry.....	1	---	---	†Requiring twelve weeks of afternoon work in the Chemical Laboratory.
Physiological Chemistry.....	1	60	60	*In General Lecture-room.
Analysis of Urine.....	1	---	---	†Requiring twelve weeks of afternoon work in the Chemical Laboratory.
An Extended Course—Analysis and Toxicology.....	---	---	---	†Continuing through college year in Laboratory. (Optional).
Zoology and Physics.....	---	---	---	Instruction given in the Department of Literature, Science, and the Arts. (Optional).
Electro-Therapeutics.....	---	---	---	†Twelve lessons—practice with instruments in Laboratory.
Sanitary Science.....	1	20	20	*In General Lecture-room.
Obstetrics.....	2	45	90	In General Lecture-room.
Diseases of Women and Children.....	2	45	90	In General Lecture-room.
Clinical Gynaecology and Diseases of Children.....	1	72	72	In Amphitheatre, supplemented in Hospital.
Materia Medica.....	3	108	324	In General Lecture-room.
Preparation of Medicines.....	1	36	36	In Hospital Dispensary.
Principles of Surgery.....	2	60	120	In General Lecture-room.

* Department of Medicine and Surgery. † Chemical Laboratory.

SCHEDULE OF STUDIES CONTINUED.

SUBJECTS.	Number of Courses required.	Number of Lectures in each Course.	Number of Lectures to be attended.	REMARKS.
Clinical Surgery.....	2	60	120	In Amphitheatre, supplemented in Hospital.
Minor Surgery.....	1	18	18	In General Lecture-room.
Minor Surgical Gynæcology..	1	18	18	In General Lecture-room.
Principles and Practice of Medicine.....	2	60	120	In General Lecture-room.
Clinical Medicine and Differential Diagnosis.....	2	60	120	In General Lecture-room.
Operative Surgery.....				In Amphitheatre, supplemented in Hospital.
Institutes of Homœopathy...	2	36	72	In General Lecture-room.
Medical Jurisprudence.....	1	20	20	In the Department of Law, and in the General Lecture-room.
Ophthalmology and Otology..	1	24	24	In Amphitheatre, supplemented in Hospital.
Clinical Ophthalmology and Otology.....	1	36	36	In Amphitheatre, supplemented in Hospital.
Practical Demonstrations in Obstetrics.....				In Hospital.

taught, and the grade of each student is entered upon the records of the Faculty. Each student who does not come up to the required standard is notified of his failure, and opportunity is given him to prepare for a second examination upon the subjects wherein he has failed, in order that he may enter upon the advanced studies of the next semester.

The final examinations are conducted, in part at least, in writing. All examinations for the degree are conducted by the Faculty.

V. REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have successfully pursued the study of medicine for the period of three years, including the time spent in attendance upon lectures. He must have attended at least

seventy-five per cent of the regular lectures, must have spent the required time in practical anatomy, chemical analysis, etc., in the various laboratories and hospitals, and must have attended the usual quizzes and drills by the assistants of the several chairs. He must also have passed satisfactory examinations on all the studies included in the curriculum; or, if admitted to advanced standing, he must have attended at least two full courses of medical lectures, the last of which was at this College, and must have passed the required examinations.

Students who, in the first year, are allowed by a special vote of the Faculty to take all the lectures of which two courses are required, and who also take a suitable number of those required but once, may, after examination, obtain permission to pursue their studies with a competent preceptor out of the College during their second year, and, after completing the course required by strict attendance during the full third year, may present themselves for examination for the degree at the end of that year.

Students who have completed full college courses for the first and second years in an accredited medical college will be permitted, upon examination, to enter the third year and complete the studies of that year in this College, and to present themselves for examination for the degree at the end of the year.

All candidates for graduation must present to the Secretary time-certificates from the Secretary of the Faculty of the Department of Medicine and Surgery, showing what lectures and studies they have attended in that department.

VI. SPECIAL FACILITIES FOR INSTRUCTION.

The unsurpassed facilities offered by the University of Michigan for thorough study and for original work in various directions are in themselves worthy the serious consideration of all medical students.

The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, and pathology. The facilities for the study of chemistry, afforded by the Chemical Laboratory, are not excelled in any

medical college in this country, and the arrangements of the laboratory work are such that medical students, in classes, and working under the direction of the professor in charge, receive practical instruction in the courses on qualitative chemistry, and in the analysis of urine, a knowledge of which has become absolutely indispensable to the successful physician. The Histological Laboratory, with its collection of microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and in histology. The new Hygienic and Anatomical Laboratories, just erected and open to all students of the University, are models of beauty and convenience, affording facilities for instruction in hygiene and in practical anatomy, unsurpassed, if equalled, by those of any other institution of learning in the United States. In addition to these, students have free access to the general and special cabinets of the University, containing some 255,000 specimens. The scientific and philosophical lectures, collateral to medicine, given in the Department of Literature, Science, and the Arts, are also open to them.

The Homœopathic College, in addition, possesses the valuable collections of anatomical and pathological specimens presented to it by Dr. J. N. Eckel, of San Francisco, Cal., and Dr. A. I. Sawyer, of Monroe, Mich.; these, already comprising much valuable material, are constantly growing in importance through contributions from friends of this institution.

The lecture room and amphitheatre are arranged conveniently, have ample seating capacity, and embody the conveniences and necessities which are essential points to the teacher and students.

The Hospital, built and thoroughly equipped by act of the Legislature, is in charge of a competent resident medical officer and an experienced matron; it is provided with a corps of trained nurses, wards for male and female patients, special rooms for antiseptic surgery, dispensary, etc., all of these under the immediate direction of the Faculty, the members of which attend upon the sick in the hospital, and draw from them the material for the clinical instruction of the class.

The clinical advantages offered are more than ample to meet the demands of any school. Although not placed in the midst of a populous city, the College has had no difficulty in securing all the clinical material which could be exhausted, embracing almost every pathological condition likely to occur in daily practice, and a great variety of rare cases and of surgical operations of unusual importance.

VI. TEXT-BOOKS AND BOOKS OF REFERENCE.

Any one of the following text-books in each department will answer the necessities of the student; and, wherever a preference exists, it is given to the one first in order on the list.

ANATOMY.—Gray; Quain; Ford's Questions; Wilson; Leidy; Darling; Stricker.

PHYSIOLOGY.—Martin; Foster; Landois and Stirling; Flint; Kirkes.

CHEMISTRY.—*General Chemistry.*—Miller's Chemical Physics; Miller's Inorganic Chemistry; Bloxam's Chemistry; Fownes's Chemistry; Remsen's Organic Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry.

MATERIA MEDICA AND THERAPEUTICS.—Hahnemann's *Materia Medica Pura* (translated by R. E. Dudgeon, M. D.); Dunham's Lectures; Hempel and Arndt's *Materia Medica and Therapeutics*.

PHARMACY.—O'Connor's American Homœopathic Pharmacopœia.

INSTITUTES OF HOMŒOPATHY.—Hahnemann's *Organon* (Wesselhœft's translation).

BOTANY.—Gray's Manual.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Ziegler; Wagner; Green; Paget; Williams's Principles. *For Reference.*—Rokitansky; Virchow.

DISEASES OF WOMEN.—Emmet; Edis; Ludlam; Hart and Barbour; Thomas; Schroeder.

OBSTETRICS.—Guernsey; Leavitt; Lusk; Parvin; Galabin; Playfair. *For Reference.*—Cazeaux and Tarnier.

DISEASES OF CHILDREN.—Hartmann; Teste; Eustace Smith; Edmunds. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; West on the Nervous Diseases of Childhood; Routh on Infant Feeding.

THEORY AND PRACTICE.—Arndt's System of Medicine; Raue; Dickinson; Hughes; Lilienthal; Baehr's Therapeutics; Clapp on Auscultation and Percussion; Da Costa on Medical Diagnosis; Loomis on Physical Diagnosis; Bulkley's Hand-book of Skin Diseases.

SURGERY.—Helmuth; Gilchrist; Hamilton; Erichsen. *Special Subjects.*—Hamilton on Fractures and Dislocations; Keyes on Venereal Diseases; Sayre on Club Foot; Otis on the Genito-Urinary Diseases; Ranney

on Surgical Diagnosis. *Minor Surgery and Surgical Appliances*.—Wales; Hamilton; Heath.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye*.—Angell; Norton; Wolfe; Buffum; Soelberg Wells; Stellwag; Schweiger; Metz. *On the Ear*.—Winslow; Cooper; Roosa; Toynbee (with Hinton's Supplement).

URINARY PHYSIOLOGY AND PATHOLOGY.—Vaughan; Hassall; Beale; Parkes; Thudichum; Neubauer; Vogel.

HISTOLOGY.—Stowell's Manual; Schæfer; Klein; Stricker.

PHYSIOLOGICAL CHEMISTRY.—Brunton's Handbook for the Physiological Laboratory; Thudichum's Manual of Chemical Physiology. *For Reference*.—Lehmann's Physiological Chemistry.

ELECTRO-THERAPEUTICS AND ELECTRO-SURGERY.—Beard and Rockwell; Butler.

VII. FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *ten dollars* an extremity is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For the courses in the Chemical Laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the Histological Laboratory. A charge of *one dollar* is made to students who take the course in Electro-Therapeutics.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this College, may be permitted such attendance on the payment of the matriculation fee only.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents. The Matriculation Fee is paid but once, and entitles the student to the privileges of permanent membership in the University.

TABLE OF FEES.

College Fees, first year	For Michigan Students, \$	35	For all others, \$	60
“ “ second year	“ “ “	25	“ “ “	35
“ “ third year	“ “ “	25	“ “ “	35
Total Fees for three years	“ “ “	\$ 85	“ “ “	\$ 130
Diploma Fee	“ “ “	10	“ “ “	10
Material for Dissection	“ “ “	20	“ “ “	20
Laboratory Expenses	“ “ “	about 24	“ “ “	24

For additional information in regard to expenses, see pages 27 and 28.

All letters of inquiry should be addressed to Dr. James C. Wood, Secretary of the Homœopathic Medical College, Ann Arbor, Michigan.

Students arriving at Ann Arbor, and desiring further information, should apply at the office of the Faculty, in the Homœopathic Hospital, North University Avenue. The office will be open daily during the last week in September, and members of the Faculty or the Resident Surgeon will be in attendance. The office hours of the Dean are from 9 to 11 a. m.; of the Secretary, from 3 to 5 p. m.

College of Dental Surgery.

The fourteenth annual course of instruction in this College will extend from October 1st, 1888, to the last Thursday of Junē, 1889, with a recess of about two weeks during the Christmas holidays.

I. REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the University, or a graduate of some recognized college, academy, or high school, every candidate must be examined as to his previous education and his fitness to appreciate the technical study of dentistry. The examination will be chiefly in writing, and will embrace the usual branches of an English education. In order to secure release from this examination, the candidate must present his diploma or certificate of graduation. It is also strongly recommended that the applicant possess at least such a knowledge of Latin as may be attained by one year's study, the ability, for example, to read the first two books of Cæsar; or such a knowledge of the German language as can be secured by one year's study under good instruction. The above named preparation in Latin or German may be made a requirement at an early date.

Examinations will be held in Ann Arbor on Saturday, September 29, 1888. Candidates are expected to be present at that time. To provide for cases in which it is impossible for the applicant to be present, supplementary examinations will be held at such times as may be determined by the Faculty.

Before admission to examination every student is required to present to the Dean of the Faculty the Treasurer's receipt for

the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in this College, and pay his fee to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Arrangements have also been made, whereby admission examinations are conducted at any time designated by the examiners, between July 1 and September 20 of each year, at the places and by the persons named below.

Dr. W. St. Geo. Elliott, No. 29 Upper Brook St., London W., England.

Dr. John S. Marshall, 242 Wabash Ave., Chicago, Ill.

Dr. J. G. Friederichs, No. 155 St. Charles St., New Orleans, La.

Dr. E. G. Betty, Cincinnati, Ohio.

Dr. J. G. Templeton, 299 Penn Ave., Pittsburgh, Pa.

Students are allowed to select seats in the lecture rooms and places in the Dental Laboratory in the order in which they matriculate; and each student is expected to occupy the seat selected during the session.

II. COURSE OF INSTRUCTION.

In the arrangement of the course of study it is the aim to make it such as will meet the requirements of the student and the expectations of the dental profession, and secure the greatest benefit to the public. It is generally conceded that graded and progressive work promises the best results in education. Though the term has been extended to nine months, some, and it is hoped many, will prefer to take three terms for the thorough mastery of the subject of the course. When a three term course is elected, a change will not be permitted, except with the unanimous consent of the Faculty. In order to meet the requirements, the following schedule, making a three years' course, is presented and strongly recommended:

FIRST YEAR.—Anatomy, Physiology, General Chemistry, Prosthetic Dentistry, Metallurgy, and Histology.

SECOND YEAR.—Review of the first year's studies, Theory and Practice of Dentistry, Principles of Surgery, Materia Medica, Dissections, Analytical Chemistry, and Histological Laboratory.

THIRD YEAR.—Theory and Practice of Dentistry, Clinical Dentistry,

Pathology, Therapeutics, Oral Surgery, and Diseases of Women and Children in relation to oral affections.

At the middle of the second year the student may be admitted to an examination on Anatomy, Physiology, General Chemistry, and Prosthetic Dentistry. Prior to this he must make two or more satisfactory practical dentures; he must also present for examination a denture or appliance as evidence of skill that shall be acceptable to the Faculty. At the end of the second year, an examination is required upon the principles of Pathology, Materia Medica, Histology, and Analytical Chemistry. During or at the end of the third year examinations are made upon all the branches not previously disposed of; and additional proofs of skill and ability may be required at the discretion of the Faculty.

For those who may find it necessary to complete their course in two years, the following scheme has been prepared:

FIRST YEAR.—Anatomy, Physiology, Dissections (during the holidays), General Chemistry, Theory and Practice of Dentistry, Prosthetic Dentistry, Principles of Surgery, Materia Medica, Histology and Histological Laboratory, and Metallurgy.

SECOND YEAR.—Anatomy, Physiology, Pathology, Theory and Practice of Dentistry, Clinical Dentistry, Analytical Chemistry, Oral Surgery, Therapeutics, and Diseases of Women and Children.

At the end of the first year there is a preliminary examination in Anatomy, Physiology, Prosthetic Dentistry, and Metallurgy.

Students in dentistry take such of their lectures as are given in the Department of Medicine and Surgery, in connection with the regular classes in that department. The facilities there offered for the satisfactory study of all branches common to general medicine and dentistry are full and complete. The advantages offered by a fully equipped medical college are of the first importance to the student of dental science, and attendance upon at least one entire course of medical lectures may properly be regarded as the true foundation for the study of dentistry.

Anatomy, the groundwork of our science, is studied didactically and practically. Besides the full course on general anatomy, which the students attend with the medical class, special

instruction is given in the anatomy and histology of all that pertains to the oral apparatus, embracing also particular attention to *comparative* dental anatomy.

All candidates for graduation are required to take a course in the Histological Laboratory. In this course the principal structures and tissues of the animal body are studied in detail, and special attention is given to their pathology, including the minute study of the new formations. The course not only gives the student a knowledge of animal structures and tissues, but makes him familiar with the workings and uses of the microscope.

In view of the important part chemical agents and processes play in the dentist's laboratory and operating room, and the marked influence they have in the diseases of the teeth and associated parts, students are required to attend lectures on Inorganic and Organic Chemistry. They also have the advantages of the Chemical Laboratory, for the practical study of all those agents or secretions that concern their future needs in the prevention and cure of disease. A course in analysis of saliva is required, and analysis of urine is made optional to the student.

Under the head of *Materia Medica* and Therapeutics, all the remedial agents the dentist needs to use, and the fundamental principles which guide their application in practice, are brought in review. The instruction consists of lectures given in the Department of Medicine and Surgery, together with special lectures on dental medicine.

The instruction in Pathology and the Practice of Medicine furnishes ample means for becoming acquainted not only with the principles, but with the details of practice.

A complete course in Surgery, both didactic and clinical, is given, which fully meets the dentist's needs,—embracing the discussion and presentation of surgical diseases, as well as the underlying principles of surgical practice wherever applied.

Knowing how seriously the conditions of maternity often disturb the system, the dental student may take with profit the instruction given in the lectures on gynecology. The diseases of children, also, as affecting dentition, and as affected by it, should receive special attention.

In the course on the Theory and Practice of Dentistry, the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation as well as restoration to health when diseased, are presented. This instruction applies not only to the various affections of the teeth and contiguous parts, but to the character and application of remedial agents, and to the various approved methods of operating, with all the details of conditions, materials, instruments, and appliances. The student is required to make his attainments thorough in all these particulars, in order that he may not be at a loss for a guide to his treatment and manipulation.

In Clinical Dentistry the most thorough practical instruction in details of operations, and in the preparation of instruments and appliances used, is given. The rooms are ample and well arranged, and supplied with operating chairs and other requisite facilities. All valuable appliances will be made available, and instruction in their use given. Each member of the senior class must have a dental engine; and he is required to spend a part of each day in the clinic room.

The instruction in Prosthetic Dentistry embraces everything necessary to enable the dentist successfully to supply substitutes for lost dental organs. Special reference is had to the principles involved in the restoration of the natural functions of the teeth, viz., mastication, speech, and expression of features, keeping in view always the health and future usefulness of the living parts. Practical and valuable modes only are taught, and no time is wasted upon worthless and obsolete styles.

Those who have laboratory tools and appliances should bring them; those who have not, are advised to defer purchasing till they arrive in Ann Arbor, as they will then have the aid of the teachers in making proper selections. Each student, before beginning his work, is required to procure the tools and appliances necessary for his own use. A list of these will be furnished him here.

Particular attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

III. REQUIREMENTS FOR GRADUATION.

Every candidate for graduation must be twenty-one years of age; must possess a good moral character; must have devoted three years to the study of dentistry, and have made such attainments in all the branches of the course of study, as shall be satisfactory to the Faculty; and must have attended two full courses of lectures in this College; and he is recommended to attend these consecutively.

Students who are allowed to enter after the beginning of the session will be required to attend, before graduation, two full courses, in addition to the fractional course. However, one course in any other dental college having an equal or similar standard of requirements to this, will be accepted as an equivalent of one course here. But all applicants offering such an equivalent shall, at the option of the Faculty, submit to a preliminary examination.

A graduate of the Department of Medicine and Surgery may enter this College, and, if found qualified, may graduate after two years have been devoted to the study of dentistry, including the courses of lectures.

Every candidate is required to write from time to time upon the various branches of his course, and may at the discretion of the Faculty be required to prepare a thesis upon some assigned topic; he must present for inspection practical operations performed by himself in this College, and give evidence, satisfactory to the Faculty, of ability in the practice of his profession.

Under the provisions of the "Dentists Act" of Great Britain, graduates of this College, who are not British subjects, are allowed by the General Medical Council to register and to practice dentistry in that country, without further examination.

Certificates of attendance are given for the actual period of attendance only.

IV. FACILITIES FOR INSTRUCTION.

The Dental Museum is supplied with a large number of anatomical, physiological, pathological, and histological preparations, including a series illustrating dentition from infancy to the completion of the process in the adult, and the normal

changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facilitate the study of the nervous and vascular systems. The design is to make every practicable appliance in this direction available.

In addition to the above, the Museum of Anatomy and Materia Medica is rich in material to aid the student. The Museum is always open to students, and the collections are constantly used in illustrating lectures. The Museum of Natural History, which contains more than 250,000 specimens, is also accessible to all who desire its advantages.

The Chemical and Histological Laboratories are well furnished with all needed apparatus for instruction and research. These laboratories are open through the college year.

The University Library is open daily, and offers its advantages to all who desire to use it. It contains the Medical Library, comprising about 3,000 volumes. A library of dental science, containing almost every known work on this specialty, is also accessible to the students.

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the Department of Literature, Science, and the Arts.

POST-GRADUATE WORK.

So often, and with such interest, have inquiries been made as to the facilities for post-graduate study and work, that it has been thought advisable to open the way, and afford such facilities as may be practicable, for the accommodation of those who are prepared, and desire to take such work. A circular, giving the regulations, and outlining the work, that may be pursued, will be sent to any one desiring it, upon application to the Dean.

V. TEXT-BOOKS.

ANATOMY.—Gray.	METALLURGY.—Essig.
PHYSIOLOGY.—Dalton, Foster, Martin.	PROSTHETIC DENTISTRY.—Richardson.
HISTOLOGY.—Stowell.	ORAL DEFORMITIES.—Kingsley.
PATHOLOGY.—Wagner.	CHEMISTRY.—Miller.
DENTAL PATHOLOGY.—Wedl.	PRACTICAL CHEMISTRY.—Prescott.
ORAL SURGERY.—Garretson.	THERAPEUTICS.—Bartholow, Gorgas.
OPERATIVE DENTISTRY.—Taft, Harris,	MEDICAL DICTIONARY.—Thomas.
Tomes.	DENTAL DICTIONARY.—Harris.

VI. FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

LABORATORY EXPENSES.—*Chemical Laboratory.*—Students are required to pay for the materials and apparatus actually consumed by them. Experience has shown that the average expense for all courses is about one dollar and twenty cents a week. *Dental Laboratory.*—The expenses for tools for each student are about *thirty dollars*, and for incidentals, gas, teeth, etc., about *fifteen dollars*. These are furnished at the College under the direction of the Faculty.

OTHER EXPENSES.—For further information in regard to fees and expenses, see pages 27 and 28. The average total expenses of a student of dentistry are from two hundred to two hundred and fifty dollars for the college year of nine months.

Those who desire further information concerning the College of Dental Surgery may address Dr. J. Taft, Dean, Ann Arbor, Michigan.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

List of Graduates of 1887.

DEGREES CONFERRED.

BACHELOR OF LETTERS.

Elma Mary Blackman,	Dora Ella Kennedy,
Antoinette Brown,	Maria McDonald,
Leonidas Connell,	Myron Williams Mills,
Maria Ruth Guppy,	Stafford Thomas Mitchell,
George Matthews Hewey,	Edwin Pritchard Trueblood.

BACHELOR OF SCIENCE.

[IN MINING ENGINEERING.]

John McIntyre Jaycox.

BACHELOR OF SCIENCE.

[IN MECHANICAL ENGINEERING.]

Francis Joseph Baker,	John Denison Hibbard,
Joseph Halsted,	James Alfred Sinclair,
Kendal Woodward Hess,	Earl Porter Wetmore.

BACHELOR OF SCIENCE.

[IN CIVIL ENGINEERING.]

Benjamin Butler Bowen,	George Loughnane,
Seward Cramer,	John Cranch Moses,
Charles Young Dixon,	Fred Blackburn Pelham,
William Roy Hand,	George Ernest Roehm,
George B. Hodge,	Benno Rohnert.

BACHELOR OF SCIENCE.

[IN GENERAL SCIENCE.]

Katherine Eloise Barnes,	Louis Parker Jocelyn,
Charles Potwin Beckwith,	Webster S. Ruckman,
Addie Deett Bird,	Elmer Sanford,
Arthur Graham Hall,	James Lincoln Skinner,
	K. Gertrude Stevens.

BACHELOR OF PHILOSOPHY.

Wirt McGregor Austin,
 Thomas Jack Ballinger,
 Emma E. Beers,
 Frank Forrest Bumps,
 Anna Louise Campbell,
 George Peter Cary,
 Celia Esther Chamberlain,
 George Edward Fairbairn,
 David Emil Heineman,

Michael Edward McEnany,
 Robert Webber Moore,
 Robert Ezra Park,
 Samuel Kemp Pittman,
 Jesse Cornell Shattuck,
 Frances Adelia Slaght,
 George Edward Taylor,
 John Charles Warmbier,
 Francis James Woolley.

BACHELOR OF ARTS.

Ephraim Douglass Adams,
 James Everett Ball,
 Arthur Lincoln Benedict,
 Adelaide May Bradford,
 Robert Corwin Bryant,
 Clarence Byrnes,
 Martin Cavanaugh,
 William Wallace Chalmers,
 Fred Converse Clark,
 Minnie Olive Florence Clark,
 Isabella Cook,
 Charles Horton Cooley,
 Arthur John Covell,
 George Ellsworth Dawson,
 Elizabeth Sargent Gastman,
 Charles Edwards Grove,
 Nellie Bartlett Haire,
 William Henry Hawkes,
 Satia Jewett Hyde,
 Violet Delille Jayne,
 Frederica Florence Jones,

Guy Lincoln Kiefer,
 Florence Bingham Kinne,
 Clesson Selwyne Kinney,
 Llewellyn Cary Lawrence,
 Moritz Levi,
 Helen Louisa Lovell,
 Lawrence Amos McLouth,
 Susie Suvina Mishler,
 Thomas Frank Moran,
 Alphonso Gerald Newcomer,
 Claire Avery Orr,
 Belle Purmort,
 John Charles Ranacher,
 Edmund Jeremiah Shaw,
 Frederick David Sherman,
 Mark Roger Sherman,
 Walter Teis Smith,
 Jerome Beers Thomas,
 Franklin Luppen Velde,
 William Henry Walker,
 James A. Wardlow,

Frank Enos Welch.

MASTER OF SCIENCE.

Shigehide Arakawa, B. Agr.,

Frederick George Novy, B. S.

MASTER OF PHILOSOPHY.

Edwin Swarthout, Ph. B.

MASTER OF ARTS.

Laura Donnan, A. B.,

Estelle Lois Guppy, A. B.,

George Francis James, A. B.,
George Culley Manly, A. B.,

Hannah Robie Sewall, A. B.,
Margaret Stewart, A. B.

DOCTOR OF PHILOSOPHY.

Webster Cook, A. M.,

John Foster Eastwood, A. M.

DOCTOR OF MEDICINE.

[DEPARTMENT OF MEDICINE AND SURGERY.]

John Frederick Abbott,
Justina Southgate Anderson,
Oliver Elmer Ellsworth Arndt,
William Tisdale Atkinson,
Leonard Chester Backus,
James Kleckner Bartholomew,
Roxie Ellen Bates,
Arthur Bennett,
Edward Samuel Blair,
Josephine Dorr Blake,
Henry Boss,
Augusta Mulford Brewer,
Lyman Augustus Brewer,
Arthur Hamilton Brownell,
William Edward Buschman,
Mary Elizabeth Clark,
Miles Hartson Clark,
Frank Smith Collier,
William J. Coppernoll,
Walter Armstrong Cowie,
Lancelot B. Dawson,
John Webb Decker,
Homer George Emery,
Elizabeth Martha Farrand,
Ashble Howard Fassett,
Charles Mark Freeman,
Louis Albert Fritsche,
John Clark Gauntlett,
Edward Branford Gibson,
Leon Mitchell Gillette,
Mary Edna Goble,
George Gundlach,
Addie Emma Gurd,
George Clinton Hafford,

George Andrew Hare,
Jesse Daniells Hare,
Leonard Francis Hatch,
Kate Annabelle Hathaway,
Grant Sumner Hicks,
Homer Dwight Hodge,
Charles John Hood,
Benjamin Franklin Horner,
Gothelf Charles Huber,
Philo Hull,
Gilbert Bastedo Johnston,
William Murray Johnston,
Frank Miner Kerry,
June kichi Kimura,
George Washington Lacea,
Otto Landmann,
Ella Marx,
George McIntyre,
Jennette Matilda McLaren,
David Decker McNaughton,
Burton Albion Meacham,
George Leonard Meyer,
Wilmot Fred Miller,
Frank Daniel Myers,
Otto Negelspach,
Henry Palmer,
Thomas Charles Phillips,
Edward Joseph Price,
John Abbott Prince,
Eugene V. Riker,
Alpheus Worley Ringer,
Edward Alexander Runyan,
Albert Franklin Schafer,
Minnie Elizabeth Sinclair,

Peter Frank Smith,	Esther Gilbert Willoughby,
William Hoffman Stauffer,	William Henry Winslow,
Frederick Charles Thompson,	Thomas Michael Winters,
Edward R. Wagner,	Frank Paine Witter,
Michael Eugene Whalen,	Nellie Ida Woodworth,
Almond Henry Wicks,	Charles D'Abbs Wright,
Wilbur Clarence Wright.	

BACHELOR OF LAWS.

Thomas Adams,	Anton Henry Classen,
Cassius Alexander,	John Quincy Cline,
George Butler Andrews,	Harry Godfrey Clock,
George Edgar Arbury,	John Francis Connor,
Reuben Ensign Babcock,	Oliver James Cook,
Hiram Hubbard Bacon,	Edwin A. Corbin,
Charles Nathan Banks,	John Clinton Coveney,
John David Barkalow,	Edward Leverett Curtis,
John Grant Barnes,	Webster William Davis,
William Alexander Barnes,	William David Davis,
John D. Barry,	Corinne Douglas,
Richard Martello Bates,	Hamilton Douglas,
Edward Davison Black,	Frank Edward Duncan,
Franklin Pierce Blackman,	George Dysart,
George Morton Bleecker,	Albert Danner Elliot,
Charles Blanchard Boyce,	Byron Ransom Erskine,
James Walter Brannum,	John Alaric Fairchild,
Elmer Ellsworth Brooks,	Lucius Matlack Fall,
Edwin Newton Brown,	Leonard Sumner Ferry,
George Fawcett Brown,	Jay Elisha Gladding,
John Brown,	Joseph Montgomery Glasgow,
Will Ellis Brown,	Oliver Anson Goss,
George Brinton McClellan Burd,	Louis Edward Gossman,
Wolcott Hackley Butler,	William Emory Gross,
Clinton Lee Caldwell,	Wilfred Rudesill Guy,
Daniel Fisher Campbell,	Bayard Taylor Hainer,
William Owens Campbell,	Grant Earl Halderman,
Charles Lunt Carter,	James Preston Hall,
Howard Williamson Cavanagh,	James Grant Hays,
William Clinton Chadwick,	Samuel Franklin Henderson,
Charles Sherwin Chase,	Charles Gilbert Hinds,
Fred I. Chichester,	Oscar James Hood,
William Alexander Clark,	Clinton Woodbury Howard,

Joseph Henry Ingwersen,
William Jefferson Inman,
Kakutaro Itaya,
Fred William Job,
Adna Romulus Johnson,
Thomas D. Kearney,
Austin McCreary Keen,
Frank Herman Kennedy,
William Henry King,
Charles Willibald Kuhne,
Charles Carney Lee,
James Leazure Loar,
Charles Albert Loomis,
Ubaldo Loranger,
Austin Clark Loveland,
Albert Hurd Lowman,
Oscar Charles Lungershausen,
Charles Robert Mains,
George Culley Manly,
Asa Edson Mattice,
James David May,
Rebecca May,
William Culp McEldowney,
William Wilson McNair,
Charles Warren Miller,
Elmer Ellsworth Miller,
William Henry Mohrmann,
Florence C. Moriarty,
Tadao Nakamura,
Durbin Newton,
Edmund Cone Nordyke,
Francis Joseph O'Brien,
Ellsworth E. Otis,
James Beatty Owens,
Frank Sparrow Parker,
Thomas J. Peach,
Edwin Deppen Peifer,
Edward Fitch Pettis,
Jay Eugene Pickard,
Charles Sumner Pierce,
Frank Alvin Rasch,
Louis Oliver Rasch,
Charles Reed,
James Edgar Ricketts,

Charles Perry Roberts,
Absalom Rosenberger,
Frank Henry Rutter,
George Washington Saulsberry,
James Newton Saunders,
Edward Jay Scofield,
John Vincent Sheehan,
Timothy Daniel Sheehan,
Francis Giles Shumway,
Samuel Ira Slade,
Charles Milton Smith,
Henry Isaac Smith,
Welcome Johnston Smith,
Frederick Waeir Stevens,
John Wesley Mayo Stewart,
Charles McClellan Strickler,
Lyman Beecher Sullivan,
Elvin Swarthout,
Jacob Bowman Sweitzer,
Harvey Tappan,
Orla Benedict Taylor,
Sidney Stockton Taylor,
Walter Augustus Thieme,
Albert Martin Thomas,
Isaac Samuel Thompson,
Carl Andrew Wagner,
William Edward Walsh,
Thomas Henry Ward,
Francis Louis Weaver,
Frank Wells,
James Henry Wendorff,
Ernest Willard Whipple,
John Jefferson Whitacre,
Avery Claborn White,
Fred Patterson Whiteley,
Mary Collins Whiting,
William Tyre Whittington,
Levi Peet Wilcox,
Margaret Lyons Wilcox,
Lytle Wilkinson,
George Rodden Willard,
Otis Andrew Williams,
Charles Bramble Wilmot,
Emmet Daniel Wiltse.

PHARMACEUTICAL CHEMIST.

Charles Baker,	Wilber Fisk Jackman,
Herman Louis Barie,	Mervin A. Jones,
Adam John Baumhardt,	Benjamin Silvanus Krause,
Emery Rice Beal,	Willis Leisenring,
Louis Britten Carr,	Edward Hall Marshall,
Joseph Martin Croman,	Andrew Stuart Mitchell,
William Henry Doehne,	Gustave Adolph Reule,
William Arnold Dothany,	Julius Otto Schlotterbeck,
Louis A. Dryfoos,	Charles G. Shubel,
Richard Southard Dupont,	Darius Parsons Shuler,
Leroy Adelbert Ellis,	Clayton Joseph Standart,
Samuel Slokom Hance,	George Ballard Topping,
Florence Edith Hendershott,	Abraham Van Zwaluwenburg,
Fred Joseph Henning,	Willard McKenzie Warren,
Charles Delos Wiley.	

MASTER OF PHARMACY.

Edsel Alexander Ruddiman, Ph. C.

DOCTOR OF MEDICINE.

[HOMŒOPATHIC MEDICAL COLLEGE.]

George Lake Bailey,	Samuel George Milner,
Olivia Artemisia Baldwin,	Eliza Louise Orleman,
John Stuart Campbell,	Earl Fuller Shaw,
George Willard Kishpaugh,	Melancthon B. Snyder,
Matilda Jamison Lyons,	Sue McGlaughlin Snyder,
Arabella Merrill,	Rodney Chester Taylor,
Zilpha Rosannah Wheelock.	

DOCTOR OF DENTAL SURGERY.

Ernest Lee Avery,	John Thomas Martin,
Frank Corington Babcock,	Lewis Henry McDonald,
Gilbert Eli Corbin,	George Hart Miner,
Almon Dewhirst,	Joseph Lawrence Nordike,
Edward Lincoln Dillman,	Edward Everett Paxson,
Elmer Llewellyn Drake,	William Arthur Powers,
Fred William Gordon,	William Daniel Saunders,
Almer Myron Harrison,	Frank Leslie Small,
David Alexander Harroun,	Eva Claire Smith,
Harry Duncan Heller,	Clarence John Burr Stephens,
James Bailey Hoar,	James C. Stevens,
Fred Adolph Kotts,	Patrick James Sullivan,
Cyreno Nathaniel Leonard,	Charles Henry Worboys,
William Adelbert Wright.	

HONORARY DEGREES.

DOCTOR OF PHILOSOPHY.

Otto Ernest Michaelis,
Captain, U. S. Army; military and scientific writer.

DOCTOR OF LAWS.

- Justin Winsor,
Librarian of Harvard University; bibliographer; editor; historian.
Granville Stanley Hall,
Professor of Psychology and Pedagogy in Johns Hopkins University; philosopher.
William Petit Trowbridge,
Professor in the School of Mines of Columbia College; mathematical writer.
Henry Billings Brown,
United States District Judge; jurist.
Alexander Macfarlane,
Professor of Physics in the University of Texas; physicist.
James Lambert High,
Writer on law.
James Frederick Joy,
Ex-Regent of the University.
Edward Charles Pickering,
Director of the Harvard Astronomical Observatory; astronomer; physicist.
Thomas Chrowder Chamberlin,
President of the University of Wisconsin; geologist.
Eugene Woldemor Hilgard,
Professor in the University of California; chemist; geologist.
Joshua Allen Lippincott,
Chancellor of the University of Kansas.
Thomas Corwin Mendenhall,
President of the Rose Polytechnic Institute; physicist.
John Wayne Champlin,
Justice of the Supreme Court of Michigan; jurist.
John Warwick Daniel,
United States Senator from Virginia; writer on law.
Asa Gray,
Professor of Natural History and Director of the Herbarium in Harvard University;
botanist.
James Bryce,
Professor of International Law in the University of Oxford; historian; constitutional
lawyer; statesman.
Samuel Smith Harris,
Bishop of the Protestant Episcopal Diocese of Michigan; pulpit orator; theologian.
Samuel Freeman Miller,
Associate Justice of the Supreme Court of the United States; jurist.

CATALOGUE
— OF —
FACULTIES AND STUDENTS
FOR THE YEAR 1887-88.

DEPARTMENT
— OF —
Literature, Science, and The Arts.

FACULTY.

JAMES B. ANGELL, LL. D.,
PRESIDENT.

HENRY S. FRIEZE, LL. D.,
DEAN.

ALBERT B. PRESCOTT, PH. D., M. D.,
REV. MARTIN L. D'OOGHE, PH. D.,
CHARLES E. GREENE, A. M., C. E.,
WILLIAM H. PETTEE, A. M.,
JOHN W. LANGLEY, S. B., M. D.,
MARK W. HARRINGTON, A. M.,
JOSEPH B. STEERE, PH. D.,
EDWARD L. WALTER, PH. D.,
ALEXANDER WINCHELL, LL. D.,
WILLIAM H. PAYNE, A. M.,
ISAAC N. DEMMON, A. M.,
GEORGE S. MORRIS, PH. D.,
ELISHA JONES, A. M.,
ALBERT H. PATTENGILL, A. M.,
MORTIMER E. COOLEY, M. E.,
HENRY SEWALL, PH. D.,

WOOSTER W. BEMAN, A. M.,
 VICTOR C. VAUGHAN, PH. D., M. D.,
 CHARLES H. STOWELL, M. D.,
 THOMAS M. COOLEY, LL. D.,
 CHARLES S. DENISON, M. S., C. E.,
 HENRY S. CARHART, A. M.,
 RAYMOND C. DAVIS, A. M.,
 VOLNEY M. SPALDING, A. B.,
 HENRY C. ADAMS, PH. D.,
 CALVIN THOMAS, A. M.,
 CHARLES N. JONES, A. B.,
 * BURKE A. HINSDALE, A. M.,
 BYRON W. CHEEVER, A. M., M. D.,
 CALVIN B. CADY,
 JOSEPH B. DAVIS, C. E.,
 RICHARD HUDSON, A. M.,
 OTIS C. JOHNSON, A. M.,
 JOHN DEWEY, PH. D.,
 CHARLES M. GAYLEY, A. B.,
 JACOB E. REIGHARD, PH. B.,
 P. R. DE PONT, A. B., B. S.,

SECRETARY.

ALFRED HENNEQUIN, PH. D.,
 LOUISA REED STOWELL, M. S.,
 ARTHUR W. BURNETT, A. M.,
 WALTER MILLER, A. M.,
 ANDREW C. McLAUGHLIN, A. B.,
 JOHN M. SCHAEFERLE, C. E.,
 THOMAS C. TRUEBLOOD, A. M.,
 STEDMAN W. CLARY, A. M.,
 FREDERIC L. WASHBURN, A. B.,
 LUDOVIC ESTES, A. M.,
 FREDERICK G. NOVY, M. S.,
 JOSEPH F. McCULLOCH, A. B.

* Appointed, February 19, 1888, Professor of the Science and the Art of Teaching, in place of Professor W. H. Payne, resigned.

STUDENTS.*

RESIDENT GRADUATES.

NAME.		RESIDENCE.
Henrietta Ash Bancroft, Ph. B., Cornell College.	U. (4)	<i>Mt. Vernon, Ia.</i>
Henry Benner, B. S., West Chester State Normal School.	U. (2)	<i>Trumbauersville, Pa.</i>
John Edward Boyer, A. B., Whitmore College.	U. (5)	<i>Walla Walla, W. T.</i>
Ella Howison Carnall, A. B., Arkansas University.	U. (4)	<i>Fort Scott, Ark.</i>
Fred Converse Clark, A. B., Charles Horton Cooley, A. B., Fred Calvin Davis, B. S., Michigan Agricultural College.	U. (5)	<i>Earlville, Ill.</i> <i>Ann Arbor.</i> <i>Lansing.</i>
Hugh Andrew Graham, A. B., Albion College.	U. (5)	<i>Calkinsville.</i>
Elsie M. Hadley, B. S., Earlham College.	U. (2)	<i>Indianapolis, Ind.</i>
Susan Rachel Harrison, A. B., Earlham College.	U. (1)	<i>Richmond, Ind.</i>
Guy Lincoln Kiefer, A. B., James Allen Lewis, B. S., Kansas State Agricultural College.		<i>Detroit.</i> <i>Auburn, Kan.</i>
David M. Lichty, B. S., West Chester State Normal School.	U. (7)	<i>Goodville, Pa.</i>
Ross Le Hunte Mahon, Ph. B., John Walker Matthews, B. S., Michigan Agricultural College.	U. (9)	<i>Ann Arbor.</i> <i>Hastings.</i>
Yejiro Ono, Ph. B., Oberlin College.	U. (6)	<i>Yauagawa, Japan.</i>

* NOTE.—The following is the explanation of the letters and figures set against the students' names:

The letters in the column under the heading DEGREE show for what degree a student working on the credit system is a candidate; but when found opposite the name of a student pursuing the university system they indicate rather the direction in which such student is working than the degree which he may ultimately take. The figures under the heading COURSES show the number of Full Courses taken prior to the beginning of the current academic year 1887-8, and completed without conditions. By a Full Course is meant the equivalent of five exercises a week during a semester. The abbreviation U. means university system. See p. 66. The figures from 1 to 10 in parentheses indicate the group in which the chief studies of the person are found, as follows: (1) Ancient Languages and Literatures, (2) Mathematics, (3) Modern Languages and Literatures, (4) English Literature and Rhetoric, (5) History and Political Science, (6) Philosophy and the Fine Arts, (7) Physical Sciences, (8) Astronomy, (9) Geology, Zoölogy. and Botany, (10) Engineering.

164 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.		RESIDENCE.
Richard Plueddemann, A. B., German Wallace College.		<i>Ann Arbor.</i>
Myra Elizabeth Pollard, A. B.,	U. (9)	<i>Chicago, Ill.</i>
Lewis Addison Rhoades, A. M.,	U. (4)	<i>Ann Arbor.</i>
Sarah Elizabeth Satterthwaite, A. B.,	U. (1)	<i>Canandaigua, N. Y.</i>
Miner Cole Taft, A. B., Kalamazoo College.		<i>Kalamazoo.</i>
Fred Manville Taylor, A. M., Northwestern University.	U. (6)	<i>Albion.</i>
William Henry Walker, A. B.,	U. (6)	<i>Ann Arbor.</i>

GRADUATES STUDYING FOR MASTER'S DEGREE IN ABSENTIA.

NAME.	RESIDENCE.
Sarah Elizabeth Bangs, A. B.,	<i>Tallahassee, Fla.</i>
Florus Alonzo Barbour, A. B.,	<i>Ypsilanti.</i>
Katherine Eloise Barnes, B. S.,	<i>Rochester.</i>
Charles Potwin Beckwith, B. S.,	<i>Brookings, Dak.</i>
Elma Mary Blackman, B. L.,	<i>Schoolcraft.</i>
Hugh Brown, A. B.,	<i>Pontiac.</i>
William Wallace Campbell, B. S.(C. E.),	<i>Boulder, Col.</i>
Mary Sophia Case, A. B.,	<i>Wellesley, Mass.</i>
William Wallace Chalmers, A. B.,	<i>Cassopolis.</i>
Carlos Bingham Cochrane, A. B.,	<i>West Chester, Pa.</i>
Grace Darling, Ph. B.,	<i>Oshkosh, Wis.</i>
George Ellsworth Dawson, A. B.,	<i>Farmington, Mo.</i>
Charles Wright Dodge, B. S.(Biol.),	<i>Detroit.</i>
Joseph Horace Drake, A. B.,	<i>Battle Creek.</i>
Ferris Smith Fitch, Jr., A. B.,	<i>Pontiac.</i>
Myron Oscar Graves, A. B.,	<i>Wyandotte.</i>
Frederick Charles Hicks, A. B.,	<i>La Porte, Ind.</i>
William Henry Honey, A. B.,	<i>Caro.</i>
John Nelson James, A. B.,	<i>Benton Harbor.</i>
Llewellyn Cary Lawrence, A. B.,	<i>Allegan.</i>
Jeptha Elmer Lemon, A. B.,	<i>Bay City.</i>
Moritz Levi, A. B.,	<i>Chicago, Ill.</i>
Gertrude Helen Mason, Ph. B.,	<i>Bryn Mawr, Pa.</i>
William Andrew McAndrew, A. B.,	<i>Hyde Park, Ill.</i>
Lawrence Amos McLouth, A. B.,	<i>Danville, Ill.</i>
Watson Birchard Millard, A. B.,	<i>St. Clair.</i>
Edwin Deppen Peifer, A. B.,	<i>Kansas City, Mo.</i>
Elmer Sanford B. S.,	<i>Ann Arbor.</i>
Fred Newton Scott, A. B.,	<i>Ann Arbor.</i>
Frederick David Sherman, A. B.,	<i>Berrien Springs.</i>

NAME.	RESIDENCE.
James Lincoln Skinner, B. S.,	<i>St. Johns.</i>
Hiram Allen Sober, A. B.,	<i>Michigan City, Ind.</i>
Arthur William Stalker, A. B.,	<i>Clinton.</i>
Albert Boynton Storms, A. B.,	<i>Hudson.</i>
Frank Day Wells, A. B.,	<i>Rochester.</i>
Allen Sisson Whitney, A. B.,	<i>Mt. Clemens.</i>

CANDIDATES FOR A DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Fred Hull Abbott,	A. B.	12 2-5	<i>Hudson.</i>
James Ware Adams,	B. L.	10 3-5	<i>Normal, Ill.</i>
Charles Edwin Albright,	B. L.	6 1-5	<i>Ann Arbor.</i>
Charles Towne Alexander,	B. L.	5 3-5	<i>Grosse Isle.</i>
Della Allen,	B. L.	4	<i>Ann Arbor.</i>
Hilah Lockwood Allen,	B. L.		<i>Portland.</i>
Frank Anderson,	B.S.(C.E.)	6 1-5	<i>Salt Lake City, Utah.</i>
Lizzie Viola Anderson,	B. L.		<i>Sparta.</i>
Isabella Montgomery Andrews,	A. B. U. (1)		<i>Canandaigua, N. Y.</i>
James Rowland Angell,	A. B.	6 2-5	<i>Ann Arbor.</i>
Franc Arnold,	Ph. B.	4 4-5	<i>Allegan.</i>
Frank Riley Ashley,	B. S. (Chem.)		<i>Denver, Col.</i>
Mary Emma Ashley,	A. B.	19 3-5	<i>Toledo, O.</i>
Edith Emma Atkins,	A. B.	5 3-5	<i>Ann Arbor.</i>
Helen Agnes Atkins,	Ph. B.		<i>Geneva, N. Y.</i>
Sara Frances Atkins,	A. B.		<i>Indianapolis, Ind.</i>
Glenn Mark Averill,	B. S.	5 2-5	<i>Cedar Rapids, Ia.</i>
Carrie Ayers,	B. L.	16	<i>Fort Smith, Ark.</i>
Ida Ayers,	B. L.	19 1-5	<i>Fort Smith, Ark.</i>
Robert Simeon Babcock,	B.S.(C.E.)	11 1-5	<i>Manistee.</i>
George Edwin Bailey,	B.S.(C.E.)	2 1-5	<i>Owosso.</i>
Frank Seymour Baillie,	B.S.(C.E.)	8	<i>Ann Arbor.</i>
Walter John Baldwin,	B.S.(C.E.)	10 4-5	<i>Romansville, Pa.</i>
William Dearborn Ball,	B.S.(Mech.E.)	61-5	<i>Ann Arbor.</i>
Emma McAllan Ballentine,	A. B.	2	<i>Port Huron.</i>
Arthur Hurd Bannon,	Ph. B.	5 2-5	<i>Portsmouth, O.</i>
Henry Towne Bannon,	Ph. B.	9 3-5	<i>Portsmouth, O.</i>
Grant S. Barber,	B. S.	6 1-5	<i>Ann Arbor.</i>
Fannie Barker,	Ph. B.	11 4-5	<i>Davenport, Ia.</i>
Gertrude Laura Barnes,	B. S.		<i>Rochester.</i>
Blanche Kingsbury Barney,	B. L.	15 3-5	<i>Ann Arbor.</i>
Laverne Bassett,	Ph. B.	19 2-5	<i>Ann Arbor.</i>
Harry Moore Bates,	Ph. B.	6 1-5	<i>Chicago, Ill.</i>
Lafayette Hosmer Bates,	B.S.(C.E.)	11	<i>Romeo.</i>

166 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Virginia Beauchamp,	A. B.		Baldwinsville, N. Y.
James Harvey Beazel,	A. B.	17	Apple Creek, O.
Willis John Beckley,	Ph. B.	12 1-5	Ravenna, O.
Louis Begemann,	B. L.	8 3-5	Evansville, Ind.
Dora Bennett,	Ph. B.	10 2-5	Franklin, O.
Flora Bennett,	Ph. B.	9 4-5	Franklin, O.
Andrew Rennick Benson,	B.S.(C.E.)	6 2-5	Ann Arbor.
Eugene Nimmons Best,	A. B.	10 3-5	Minneapolis, Minn.
May Bestor,	A. B.		Peoria, Ill.
Clarissa Sophia Bigelow,	Ph. B.	13 3-5	Galva, Ill.
Horace Van Birdsell,	B. L.	11 1-5	South Bend, Ind.
James Blair, Jr.,	Ph. B.		Grand Rapids.
John Noble Blair,	A. B.	17 3-5	New York, N. Y.
Thaddeus Lincoln Bolton,	A. B.	9 1-5	Ann Arbor.
Willis Elmer Bond,	A. B.		Ann Arbor.
Benjamin Parsons Bourland,	A. B.	10 4-5	Peoria, Ill.
Edward Boyle,	A. B.	20	Leslie.
Hollie Broughton Bracewell,	Ph. B.	12 4-5	Corydon, Ia.
Sam Stewart Bradley,	B.S.(C.E.)		Ann Arbor.
Edgar Ewing Brandon,	A. B.	16	Sedalia, Mo.
George Russel Brandon,	B.S.(Mech.E.)	31-5	Detroit.
Gertrude Tamora Breed,	A. B.	19	Ann Arbor.
Blanche Briggs,	B. L.	7 2-5	Battle Creek.
Carrie Ellen Britten,	Ph. B.	17 2-5	Ann Arbor.
Myrn Brockett,	B. L.		Charlotte.
Andrew McCormack Brown,	Ph. B.		Jamestown, O.
Charles A. Brown,	B. L.	3 1-5	Waynesville, O.
George Arthur Brown,	B. S.	20 1-5	Saline.
Henry Herbert Brown,	A. B.	18	Geneseo, Ill.
William Simon Brown,	B. S.		Elgin, Ill.
Minnie Thornton Buick,	B. L.		Detroit.
Follett Wilkison Bull,	Ph. B.		Ottawa, Ill.
Justin Briggs Bullis,	B.S.(C.E.)	7 3-5	Ann Arbor.
Phebe Josepha Bullock,	A. B.		East Saginaw.
Albert Burnstine,	B.S.(C.E.)	5	Detroit.
Guy Vincent Burton,	B.S.(C.E.)		Ann Arbor.
Joseph Beatty Burt,	A. B.	18 4-5	Jeffersonville, Ind.
Harvey Safford Bush,	A. B.	20	Port Huron.
Augustus Seymour Butler,	B.S.(C.E.)		Allegan.
Ok Button,	B. S.	5 4-5	Ann Arbor.
Mary Victoria Cady,	A. B.	6	Ypsilanti.
Alfred Stone Calkins,	B.S.(C.E.)		Allegan.
Clarence Galen Campbell,	Ph. B.	23	West Lebanon, Ind.
Elizabeth Alma Campbell,	Ph. B.		Ann Arbor.

NAME.	DEGREE.	COURSES.	RESIDENCE.
John Valentine Campbell,	A. B.	13 3-5	Newport, Ky.
Katherine Campbell,	A. B. 25	2 3-5	Ann Arbor.
Mattie Ormsby Campbell,	B. S. 25		Ann Arbor.
Mattie Anna Catton,	Ph. B.	6 2-5	Perry, N. Y.
Theodore Lincoln Chadbourne,	B. S.		Clinton, Ia.
James Chalmers,	A. B.	17 2-5	Sparta.
Louella Chapin,	Ph. B.	18 1-5	Chicago, Ill.
Dwight Bissell Cheever,	B. S.	4-5	Ann Arbor.
Harry Sylvester Chesbrough,	B. S. (C. E.)		Beloit, Wis.
David Smith Christopher,	B.S.(M.E.)	16 3-5	Chicago, Ill.
Eda May Clark,	B. L.	4-5	Ann Arbor.
Elizabeth Rebecca Clark,	A. B.	19 1-5	Lakeville, N. Y.
Stanton Walter Clark,	B. L.	5 3-5	May.
Susie Adelle Clark,	B. S.		Ann Arbor.
Frederick Marshall Clarke,	B.S.(Mech.E.)	6 2-5	Dubuque, Ia.
Charles Francis Clayton,	B. L.		Ludington.
Fred Bagley Close,	B.S.(Mech.E.)	5 1-5	Hancock.
Warren John Clough,	A. B.	2 2-5	Kalamazoo.
David Kipling Cochrane,	Ph. B.	23 2-5	Manistee.
George Pierre Codd,	A. B.		Detroit.
Alfred Peters Cole,	B.S.(M.E.)	3 1-5	Chillicothe, O.
Lawrence Thomas Cole,	B. S.		Ann Arbor.
Rossetter Gleason Cole,	Ph. B. U. (6)		Ann Arbor.
Louis Kossuth Comstock,	Ph. B.	19 4-5	Ann Arbor.
Ernest Ben Conrad,	B.S.(Mech.E.)	6 4-5	Ann Arbor.
Frank Elmer Converse,	B. L. U. (5)		Owosso.
Will Randolph Cook,	B. L.	3 4-5	Hastings.
Thomas Benton Cooley,	A. B.		Ann Arbor.
Edwin Marion Coolidge,	B.S.(Mech.E.)	6 2-5	Winnebago, Ill.
Lucy Coolidge,	Ph. B.		Bloomington, Ill.
Leon Huxley Cooper,	B.S.(Mech.E.)		Louisville, Ky.
Geneveive Cornwell,	B. S.		Ann Arbor.
Arthur Howe Covert,	B. S.		Ann Arbor.
Frederic Walter Crane,	B.S.(Mech.E.)	5 4-5	Ann Arbor.
Wilmarth Crispin,	A. B.	6	Ionia.
Loretta Crissman,	Ph. B.	6 3-5	Washington.
Flavius Morse Crocker,	B.S.(C.E.)	14 3-5	Ann Arbor.
Herbert Samuel Crocker,	B.S.(C.E.)	14 3-5	Ann Arbor.
Franc Nabby Crosby,	Ph. B. 46	10 2-5	Savona, N. Y.
Hattie Carrie Crosby,	Ph. B.	10 2-5	Savona, N. Y.
James Moseley Crosby,	A. B.		Grand Rapids.
Charles Henry Cushing,	A. B. U. (6)		Marietta, Ga.
Alice Harper Damon,	A. B. 34	8 3-5	Concord, Mass.
Lizzie Hadley Davis,	B. L.	5 3-5	Owosso.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Rachel Ella Dawson,	Ph. B.	19 3-5	Pontiac.
Robert Henry Day,	Ph. B.	2 4-5	Ravenna, O.
Cora Armenia Deake,	A. B.	7 2-5	South Lyon.
Lizzie Whetten Dean,	B. S.		Ann Arbor.
Herbert Fletcher DeCou,	A. B.	16 1-5	Detroit.
Louis Vincent De Foe,	B. L.		Adrian.
George Winthrop De Haven,	B.S.(C.E.)	3 3-5	Chicago, Ill.
Lottie De Mott,	B. L.		Buchanan.
George Walter Denney,	B.S.(Mech.E.)		Aurora, Ill.
Walter Dennison,	A. B.		Ypsilanti.
John Norman Derby,	B.S.(Mech.E.)	12	Detroit.
Ellsworth Thomas Derr,	A. B.	18 4-5	Opp, Pa.
William Herman Detwyler,	Ph. B.	14	Jackson.
Henry Bingham Dewey,	A. B.	6 2-5	Owosso.
Frank Haigh Dixon,	A. B.		Winona, Minn.
Robert Stuart Donaldson,	B.S.(Mech.E.)	4-5	Detroit.
John Thomas Donoghue,	B. L.	4	La Salle, Ill.
Daniel Layman Dorsey,	A. B.	11 2-5	Indianapolis, Ind.
Louis Roscoe Doud,	B.S.(C.E.)	10 3-5	Winona, Minn.
Edgar Millard Doughty,	A. B.	6	Matteawan, N. Y.
Henry Woolsey Douglas,	B.S.(Mech.E.)	12 1-5	Ann Arbor.
Earle Wilbur Dow,	A. B.		Bellefontaine, O.
Walter Schuyler Drew,	B. L.		Hammondsport, N. Y.
James Eugene Duffy,	B. L.	8 4-5	Ann Arbor.
John Leander Duffy,	A. B.	19 4-5	Ann Arbor.
Robin Ernest Dunbar,	A. B.	6 1-5	South Bend, Ind.
James Edward Eagan,	B. L.		Ann Arbor.
William Worth Eagan,	B. S.	13 3-5	Ann Arbor.
Charles Kirke Eddy,	Ph. B.	13 2-5	East Saginaw.
John Robert Effinger, Jr.,	Ph. B.		Chicago, Ill.
Edwin Hart Ehrman,	B.S.(Mech.E.)	19 3-5	Ann Arbor.
Solomon Eisenstaedt,	B. S.	19 3-5	Chicago, Ill.
Charles Edward Everett,	B. L.	13 1-5	Lansing.
Daniel Ephraim Ewald,	A. B.	19 4-5	Cleveland, O.
Albert Chauncey Eycleshymer,	B. S.	9 3-5	Hastings.
Harold Wellman Fairbanks,	B. S. U.	(9)	San Diego, Cal.
Royal Twombly Farrand,	Ph. B.	5 3-5	Detroit.
Charles Adam Fisher,	B.S.(C.E.)	4	Pontiac.
Dwight Henry Fitch,	B. L.		Howell.
Emerson Armor Fletcher,	B.S.(C.E.)		Lake Linden.
Harry Lincoln Forbes,	A. B.	6 2-5	Bloomington, Ill.
Francis Chipman Ford,	A. B.	20 4-5	Detroit.
Grant Martin Ford,	A. B.	6 2-5	Chicago, Ill.
Arthur Frantzen,	B.S.(C.E.)		Chicago, Ill.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Oliver George Frederick,	B. S.	18	Maumee, O.
Carl Kimball Friedman,	B.S.(C.E.)		Detroit.
Herbert Martin Frost,	A. B. 57	7 2-5	Ann Arbor.
David Byron Gahn,	A. B.	11 2-5	Bellevue, O.
Thomas Hart Gale,	B. L.	19 2-5	Oak Park, Ill.
George Telford Gamble,	B. L.	13 2-5	East Saginaw.
Ellen Elizabeth Garrigues,	A. B.	8 2-5	Ann Arbor.
Charles Byron Garrison,	A. B. 53	6	Vernon.
Beattie Edward Gaskell,	B.S.(Chem.)	19 4-5	Mascoutah, Ill.
Winthrop Enoch Gastman,	B.S.(M.E.)	5 1-5	Decatur, Ill.
Edwin Francis Gay,	A. B.	8 2-5	Ann Arbor.
Effie Matilda Gaylord,	Ph. B.	12	Ludington.
Albert Eugene Gebhardt,	A. B.	14 3-5	Ann Arbor.
Caroline Louise Gelston,	A. B.	17 1-5	Ann Arbor.
Hiram North Ernest Gleason,	B.S.(C.E.)	2 2-5	Sherman, N. Y.
Charles Edwin Goddard,	B. S.	12 2-5	Winnebago, Ill.
Moses Gomberg,	B. S.	6 2-5	Elisabethgrad, Russia.
Mertie Leora Goodell,	Ph. B.		Ann Arbor.
Louis Edward Gossman, LL. B.,	B. L.	2 4-5	Canton, Minn.
Katy Helen Gower,	A. B.	18	New Haven, Conn.
William Amasa Grace,	A. B.	17 1-5	Ann Arbor.
Charles Olin Graves,	B. L.	15 1-5	Bloomington, Ill.
Paul Robert Gray,	A. B.	5 1-5	Detroit.
Bernard Lincoln Green,	B.S.(C.E.)	8 1-5	Washington, D. C.
Charles Alexander Green,	Ph. B.	9	Saginaw.
John Greenshields,	A. B.	10 1-5	Romeo.
John Hubert Greusel,	B. L.	21 2-5	Detroit.
William Edgar Griffin,	B. L.		Wenona, Ill.
Roger Wisner Griswold,	Ph. B.		Grand Rapids.
Carrie Haigh,	A. B.	22 2-5	Chicago, Ill.
Warren Hamilton Halleck,	A. B.		Holly.
Walter Jones Hamilton,	Ph. B.	18 1-5	Cleveland, O.
Matthew Brown Hammond,	B. L.		South Bend, Ind.
Hutchins Hapgood,	Ph. B.	1 1-5	Alton, Ill.
Orville Richard Hardy,	B. S.		Montague.
William Warren Harless,	B.S.(C.E.)	4 2-5	Chicago, Ill.
Julian Dana Harmon,	A. B.	13 1-5	Warren, O.
Grace Ella Harrah,	B. L.	5 4-5	Detroit.
James Hugh Harris,	A. B.		Lake Linden.
William Welton Harris,	Ph. B.	15 2-5	Jackson.
Grace Hastings,	B. S.		Sandusky, O.
Charles Harrison Hatch,	B. S.	20	Bay City.
Harry James Hatch,	B.S.(C.E.)		Jackson.
Helen Louise Hatch,	B. L.		Bay City.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Frank Winchester Hawks,	Ph. B.	13 3-5	Goshen, Ind.
Willis Boyd Hayes,	B.S.(C.E.)	4 4-5	Detroit.
Walter Edward Healy,	A. B.	6 4-5	Dundee, Ill.
Arthur Strong Hebard,	A. B.	4 4-5	Pequaming.
William Carey Hebard,	A. B.	8 2-5	Pequaming.
Julius Hegeler,	B.S.(C.E.)	12 2-5	La Salle, Ill.
Frank Oscar Hellier,	B. L.		Grass Lake.
Faith Helmer,	Ph. B.	5 2-5	Ann Arbor.
David Bill Hempstead,	A. B.	5 3-5	Salt Lake City, Utah.
Percy Benjamin Herr,	Ph. B.	5 2-5	Chicago, Ill.
Belva Mary Herron,	B. L.	13 3-5	Mexico, Mo.
Ida Z. Hibbard,	B. L.	4-5	Detroit.
Preston Manasseh Hickey,	A. B. U. (1)		Detroit.
Robert Enoch Hieronymus,	Ph. B.		Springfield, Ill.
George Oswin Higley,	B.S.(Mech.E.)		Gibbon, Neb.
Hermann Charles Wm. Hildner,	A. B.	22 1-5	Detroit.
Jonathan August Chas. Hildner,	A. B.	7 3-5	Detroit.
Charles P. Hill,	B. S.		Creston, Ill.
Theodore Henry Hinchman, Jr.,	A. B.		Detroit.
Frances Hinkley,	B. S.	3 3-5	Benton Harbor.
John Eugenius Hodge,	B.S.(C.E.)	19 3-5	Beech.
Liberty Dean Holden,	B. L.		Cleveland, O.
Walter Simpson Holden,	A. B.	13 3-5	Chicago, Ill.
Robert Turner Holland,	Ph. B.		East Saginaw.
Glenn Woolsey Holmes,	A. B.		Grand Rapids.
Lydia Day Holmes,	Ph. B.	7 4-5	Bay City.
Anderson Hoyt Hopkins,	B. L.	13	Ockley, Ind.
Alice Minerva Hosmer,	A. B.	19 3-5	Chicago, Ill.
Phebe Anne Isadore Howell,	A. B.	4 4-5	Ionia.
John T. Noye Hoyt,	A. B.	5 3-5	Grand Rapids.
Elmer Ellsworth Hubbard,	A. B. U. (7)		Hinckley, Ill.
William Frank Hubbard,	A. B.	6 2-5	Monroe.
Millicent Hunt,	Ph. B.	6 1-5	Alpena.
Arthur Mekeel Hussey,	A. B. U. 12		North Berwick, Me.
William J. Hussey,	B.S.(C.E.)	4 3-5	Mendon, O.
Frank Simpson Hutchinson,	B.S.(M.E.)		Rochester, N. Y.
William Alfred Hutzel,	B.S.(Chem.)	20 2-5	Ann Arbor.
George Preston Hyde,	Ph. B.	11	Joliet, Ill.
Richard Greene Inwood,	B. L.	18 4-5	South Bend, Ind.
John Alexander Jameson, Jr.,	A. B.		Hyde Park, Ill.
Trafford Newton Jayne,	A. B.	5	Winona, Minn.
Kate Lincoln Johnson,	B. L.	13 4-5	Ann Arbor.
Nellie Minerva Johnson,	B. L.	12 3-5	Vassar.
Anna Susan Jones,	A. B.	14	Grand Rapids.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Elsie Jones,	A. B.	20 3-5	<i>Ann Arbor.</i>
Bertha Joslyn,	B. L.	13 2-5	<i>Port Huron.</i>
Otis Wilbra Joslyn,	B. S. (Mech. E.)		<i>Port Huron.</i>
Frederick Augustus Joss,	A. B.		<i>Jamestown, N. Y.</i>
William Byron Kelly,	B. L.		<i>Xenia, O.</i>
Philo Kemery,	B. L.	2-5	<i>Flint.</i>
John Reuben Kempf,	B. S. (Mech. E.)	6 2-5	<i>Ann Arbor.</i>
Arthur J. Kendall,	B. S.		<i>Ann Arbor.</i>
George Marshall Kendall,	B. L.	5 1-5	<i>Ann Arbor.</i>
Georgietta Kennedy,	B. L.		<i>Hastings.</i>
Harry James Kennedy,	A. B.	6 4-5	<i>Ionia.</i>
Thomas Kerl,	A. B.		<i>Oakland, Neb.</i>
Edward Jefferis Kerlin,	B. S. (C. E.)		<i>Greenville, O.</i>
John Pease Keyes,	Ph. B.	1 2-5	<i>Winona, Minn.</i>
Charles Theron King,	B. L.	4 3-5	<i>Ann Arbor.</i>
Ella Wickes King,	A. B.		<i>Essexville.</i>
Fred Edward King,	B. S. (C. E.)		<i>Adrian.</i>
Mary Paddock King,	Ph. B.		<i>Pontiac.</i>
Genevieve Kinne,	A. B.	11 1-5	<i>Ypsilanti.</i>
Franklin Harvey Kinney,	A. B.	17 4-5	<i>Cincinnati, O.</i>
Emory Davis Kirby,	A. B.	16 3-5	<i>Battle Creek.</i>
Alexander Campbell Kiskadden,	B. L.	U. (5)	<i>Tiffin, O.</i>
Gustav Kleene,	A. B.		<i>Peoria, Ill.</i>
Leverge Knapp,	A. B.	18 4-5	<i>Ouleout, N. Y.</i>
Abraham Lincoln Knisely,	B. L.	1 2-5	<i>Benton Harbor.</i>
Marietta Laughridge Knowles,	B. S.	16 4-5	<i>Ottawa, O.</i>
Harry Haynes Koons,	B. S. (Mech. E.)	4 2-5	<i>Shickshinny, Pa.</i>
Pomeroy Ladue,	B. S. (Mech. E.)	6 1-5	<i>Detroit.</i>
Chauncey Robert Lamb,	B. S.		<i>Clinton, Ia.</i>
Ray Dee Lampson,	Ph. B.	20	<i>Windsor, O.</i>
Nannie Fay Leas,	Ph. B.		<i>Ann Arbor.</i>
Jed Hannibal Lee,	B. L.	19 2-5	<i>Brighton.</i>
Louis Briggs Lee,	B. L.	19 3-5	<i>Brighton.</i>
Edward Fleury Le Gendre,	B. S.		<i>Ludington.</i>
Franklin Frees Lehman,	A. B.	18 3-5	<i>Madisonburg, O.</i>
Frances Charlotte Lennox,	Ph. B.	13 3-5	<i>East Saginaw.</i>
Frank Alexander Leslie,	B. L.	9 1-5	<i>Ockley, Ind.</i>
Armin Otto Leuschner,	A. B.	18	<i>Detroit.</i>
Fred Sibley Loomis,	A. B.	10 2-5	<i>Chicago, Ill.</i>
Harriet Anges Lovell,	A. B.		<i>Flint.</i>
Mary Margretta Lovell,	Ph. B.	7 1-5	<i>Climax.</i>
Frederick Homan Loveridge,	B. S. (Mech. E.)	12 1-5	<i>Coldwater.</i>
William Watson Lovett,	B. L.	3	<i>Detroit.</i>
Jacob Lowenhaupt,	B. S.		<i>Mt. Vernon, Ind.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Florella Reid Lowry,	B. L.		<i>Detroit.</i>
Lucian Hezekiah Emmett Lowry, A. B.	U. (5)		<i>Lowellville, O.</i>
Agnes Hamilton MacKenzie,	B. L.	7 2-5	<i>Detroit.</i>
Edgar Withrow MacPherran,	A. B.	1 3-5	<i>Sterling, Ill.</i>
Morgan McMorries Mann,	Ph. B.	20 2-5	<i>Ann Arbor.</i>
Walter Leeman Mann,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Rollo Glenroy Manning,	9 th B. S.(C.E.)	7 1-5	<i>Elkhart, Ind.</i>
Edward Marsh,	B. L.	5 1-5	<i>Bloomington, Ill.</i>
Ernest Marshall,	B. L.		<i>Aurelius.</i>
William Kilpatrick Maxwell,	A. B. 1 st	6 1-5	<i>Cincinnati, O.</i>
Edmund Schuyler Colfax May,	B.S.(C.E.)	6 1-5	<i>Newark, N. J.</i>
Eugene Loring McAllister,	B.S.(Mech. E.)	16 2-5	<i>Ann Arbor.</i>
Joseph Lynn McAllister,	B.S.(C.E.)	6 3-5	<i>Sinclairville, N. Y.</i>
William Stuart McArthur,	B. S.	5 1-5	<i>Cheboygan.</i>
James Nathan McBride,	B. L. U. (5)		<i>Burton.</i>
Ina McBurney,	B. S.	3 1-5	<i>Flint.</i>
Irving George McCall,	B. L.	5 4-5	<i>Delhi Mills.</i>
James Rowan McCracken,	A. B.		<i>Birmingham.</i>
Frank Daniel McDonell,	B. S.	18 4-5	<i>Bay City.</i>
Harrison Beecher McGraw,	A. R.		<i>Cleveland, O.</i>
Thomas Arthur McGraw,	B. S.		<i>Detroit.</i>
George Edward McIlwain,	A. R.	5 3-5	<i>Wayne.</i>
Charles Luther McIntire,	B.S.(Mech.E.)	17	<i>Ypsilanti.</i>
John Aloysius McLaughlin,	B. L.		<i>Muskegon.</i>
Robert Douglas McLeod,	A. R.	16 2-5	<i>Colorado Springs, Col.</i>
Arthur McNeal,	A. R.	6 4-5	<i>Allerdice, Mont.</i>
Martin McVoy, Jr.,	B. S.		<i>Bay City.</i>
Louise Meindermann,	Ph. B.	4 3-5	<i>Ann Arbor.</i>
Clara May Meiser,	Ph. B.	1 3-5	<i>Detroit.</i>
Frank Thomson Merry,	B. L.	7 2-5	<i>Ann Arbor.</i>
Martha Prentice Merwin,	A. R. U. (1)		<i>Ann Arbor.</i>
Ida Mighell,	B. L.	1 2-5	<i>Aurora, Ill.</i>
Charles Tyler Miller,	Ph. B.	18 4-5	<i>Detroit.</i>
Edwin Lillie Miller,	A. R.	6	<i>Detroit.</i>
George Edward Miller,	1 st B. S.		<i>Three Rivers.</i>
George Elmer Milliman,	A. R.	15 1-5	<i>Lakeville, N. Y.</i>
Loren Douglas Milliman,	A. R.	5 2-5	<i>Lakeville, N. Y.</i>
John Rice Miner,	B. S.(C.E.)	7	<i>Ann Arbor.</i>
Karl Roswell Miner,	B. S.(C.E.)		<i>Ann Arbor.</i>
George Ralph Mitchell,	A. R.	19	<i>Hyde Park, Ill.</i>
John Edwin Moore,	B.-S.(Chem.)	3	<i>Ann Arbor.</i>
Reuben Rice Moore,	A. B.		<i>St. Clair.</i>
Selby Albert Moran,	B. L.	20 2-5	<i>Ann Arbor.</i>
William Vaughan Moses,	B.S.(Mech.E.)	16	<i>Urbana, O.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Bertrand Paul Mossman,	Ph. B.		Fort Wayne, Ind.
Arthur Douglass Mott,	B.S.(C.E.)	7 2-5	Battle Creek.
Frank Irwin Muir,	A. B.	14 1-5	Erie.
William Howie Muir,	B.S.(Mech.E.)	18 2-5	Detroit.
Fanny Talcott Mulliken,	Ph. B.	16 1-5	Detroit.
Loyal Levi Munn, Jr.,	A. B.		Freeport, Ill.
Lewis Murbach,	Ph. B.	14 2-5	Riga.
Clyde Vallandigham Nafe,	A. B. U. (5)		Rochester, Ind.
Elmer Hartson Neff,	B.S.(Mech.E.)	10 1-5	Flint.
Minnie Howe Newby,	Ph. B.	12 1-5	Chicago, Ill.
Frederick Charles Newcombe,	B.S.	5	Flint.
Julia Bernecia Newton,	Ph. B.	1 3-5	Pontiac.
Walter Hammond Nichols,	B.S.		Salt Lake City, Utah.
Lizzie Herson Northup,	B. L.	18 2-5	Port Huron.
Benjamin Eldredge Page,	A. B.		Ann Arbor.
William Loyd Page,	A. B.	5 3-5	Ann Arbor.
Carrie Louise Paine,	B. L.	18 3-5	Detroit.
Sadie Adelaide Paine,	A. B.		Saginaw.
Carrie Marian Palmer,	B. L.	11 3-5	Ann Arbor.
Samuel Culver Park,	A. B.		Salt Lake City, Utah.
Achsa S. Parker,	A. B.	21	Norwalk, O.
Lewis Wallace Parker,	B. L.	15	Dubuque, Ia.
Lucy Anna Parker,	B. L.		Ann Arbor.
Walter Robert Parker,	B.S.(Mech.E.)	23 1-5	Marine City.
Sterling Parks,	A. B.	19 2-5	Collamer, O.
Horace Edwin Partridge,	A. B.	6 2-5	Flint.
William Henry Pease,	B.S.(C.E.)	18 1-5	Kalamazoo.
Henry Frank Pennington, Jr.,	B. L.		Charlotte.
Caroline Crosby Penny,	A. B.	7 4-5	Ann Arbor.
Ernest Blackman Perry,	Ph. B.	12 4-5	Ann Arbor.
Paul Victor Perry,	A. B.	17 4-5	Ann Arbor.
Nellie Genevieve Phillips,	Ph. B.		Ann Arbor.
Frank George Plain,	Ph. B.	18 4-5	Aurora, Ill.
Willard Pope,	B.S.(C.E.)	18 3-5	Detroit.
Erastus Francis Potter,	A. B.	17 1-5	Tecumseh.
Flora Mabel Potter,	A. B.	20 3-5	Niles.
Waldo Theodore Potter,	B. L.	6 2-5	Vermontville.
John Havard Powell,	A. B. U. (5)		Bowen, Ill.
Dwight Alfred Pray,	B. L.		Whitmore Lake.
Robert Bruce Preble,	A. B.	14	Chicago, Ill.
Fred Leroy Prentiss,	A. B.	10 3-5	Monroeville, O.
Charles Dando Prichard,	B. L.	12	Pritchardville.
Bertha Edna Pritchard,	Ph. B.		Allegan.
Harry Nelson Quigley,	A. B.	8	Richwood, O.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
William Butterfield Ramsay,	A. B.	6 2-5	<i>Ann Arbor.</i>
Louisa Fitz Randolph,	Ph. B.	5 4-5	<i>Toledo, O.</i>
Clayton Albert Read,	B. L. U. (5)		<i>Richland.</i>
Fanny K. Read,	B. L.	6 2-5	<i>Richland.</i>
George Albert Rebec,	Ph. B.		<i>East Saginaw.</i>
Robert Kennicott Reilly,	Ph. B.	6 1-5	<i>Chicago, Ill.</i>
Harold Remington,	A. B.	16	<i>Cleveland, O.</i>
Albert Dykeman Rich,	B. L.		<i>Englewood, Ill.</i>
Leon Josiah Richardson,	Ph. B.	5 4-5	<i>Jackson.</i>
Percy Hunt Richardson,	B. S. (C. E.)	17 3-5	<i>Portland, Me.</i>
Frederic Stephen Richmond,	B. S. (Mech. E.)	1 3-5	<i>Ann Arbor.</i>
Abram Linderman Riker,	B. L.	1 3-5	<i>Pontiac.</i>
John David Riker,	B. S. (Chem.)	19 1-5	<i>Fenton.</i>
Oscar Roberts,	B. S. (C. E.)		<i>Westfield, Ind.</i>
Eugene Herbert Robertson,	B. L.	4 2-5	<i>Ogden Centre.</i>
James Robertson,	B. S.		<i>Dayton, W. T.</i>
Opal Robeson,	B. S.		<i>Arcanum, O.</i>
Edward Van Dyke Robinson,	B. L.	4 4-5	<i>Bloomington, Ill.</i>
Thomas Edwin Robinson,	A. B.	4 1-5	<i>Charlotte.</i>
Everett Charles Rockwood,	Ph. B.	12 3-5	<i>Ottawa, Ill.</i>
Frank Adolph Roda,	B. S. (M. E.)		<i>Rochester, N. Y.</i>
Charles Edward Roehl,	B. S. (Mech. E.)	20 3-5	<i>Chicago, Ill.</i>
John Randolph Rogers,	B. S. (Chem.)	6 4-5	<i>Rome, Italy.</i>
Charles Whitehall Root,	A. B.	4 3-5	<i>Ann Arbor.</i>
Cora Adelle Root,	B. L.		<i>Detroit.</i>
Gertrude Rose,	A. B.	12 3-5	<i>Ann Arbor.</i>
Moritz Rosenthal,	B. L. U. (5)		<i>Dixon, Ill.</i>
Filibert Roth,	B. S.	14 3-5	<i>Ann Arbor.</i>
William Philander Rounds,	B. S. (C. E.)	11 3-5	<i>Chicago, Ill.</i>
George Herbert Rowe,	B. L.		<i>Fort Wayne, Ind.</i>
Chester Harvey Rowell,	Ph. B.	17 2-5	<i>Bloomington, Ill.</i>
Cora Maria Rowell,	Ph. B.	5 4-5	<i>Bloomington, Ill.</i>
Arthur Eli Rowley,	Ph. B.	13 3-5	<i>North Fairfield, O.</i>
Joseph Rusche,	B. S. (C. E.)	19 4-5	<i>Grand Rapids.</i>
George Fred Rush,	Ph. B.	11	<i>Chicago, Ill.</i>
Edgar Ryan,	B. S. (C. E.)	17 3-5	<i>Virden, Ill.</i>
William F. Ryburn,	A. B.		<i>Bloomington, Ill.</i>
Homer Mason Sackett,	B. S. (M. E.)	15	<i>Waverly, Ill.</i>
Robert Lemuel Sackett,	B. S. (C. E.)	4-5	<i>Mt. Clemens.</i>
Mary Eliza Sanborn,	Ph. B.		<i>Port Huron.</i>
Henry Arthur Sanders,	A. B.	3 4-5	<i>Livermore, Me.</i>
Willard Clark Sanford,	B. S. (Chem.)	17 1-5	<i>Marengo, Ill.</i>
Oscar Frederick Schmid,	Ph. B.	11 4-5	<i>Ann Arbor.</i>
Bertha Barbara Sciurus,	B. L.		<i>Saginaw.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
John Travers Scott,	Ph. B.		Galveston, Tex.
Sylvester Henry Scovel,	B. S. (M. E.)		Wooster, O.
Harry Rogers Seager,	Ph. B.	6 3-5	Ann Arbor.
Charles J. Search,	A. B.	12	Ann Arbor.
Walter Karl Seelye,	B. S.		Canton, Minn.
Francis Morton Sessions,	Ph. B.	18 4-5	Ann Arbor.
Lewis Severance,	Ph. B.		Walled Lake.
Thomas Chalkley Severance, Jr.,	A. B.	12 2-5	Walled Lake.
Walter Webster Seymour,	B.S.(C.E.)	8 3-5	La Porte, Ind.
Ralph Martin Shankland,	B.S.(Mech.E.)	17 4-5	Canton, O.
Fred Fraley Sharpless,	B.S.(Chem.)	18 4-5	West Chester, Pa.
Edwin Spencer Shaw,	A. B.	19 1-5	Ypsilanti.
Hudson Sheldon,	A. B.	6 2-5	Owosso.
Albert Laverne Shepard,	Ph. B.	11	Spencerport, N. Y.
Ida May Ives Sherman,	B. L.		Charlotte.
Penoyer Levi Sherman, Jr.,	B. S.		Chicago, Ill.
Samuel Sherman,	B. S.		Chicago, Ill.
Jennie Belle Sherzer,	A. B.	18 4-5	Franklin, O.
Lizzie Ide Shiell,	A. B.	12 3-5	Detroit.
Henry Fish Shier,	Ph. B.	18	East Saginaw.
Louis Henry Shoemaker,	B.S.(C.E.)	10 4-5	Ann Arbor.
John Ward Shotwell, Jr.,	B.S.(C.E.)	20	Richmond, Mo.
Peter Godfrey Sjöblom,	A. B.		Fergus Falls, Minn.
Clyde Sloane,	A. B.	18 1-5	Carrollton, Ill.
Honta Belle Smalley,	A. B.	20 1-5	Chicago, Ill.
James Burt Smalley,	B. S. (Mech.E.)		Bay City.
Albert Henry Smith,	B.S.(C.E.)	10	Elkhart, Ind.
Arthur Francis Smith,	Ph. B.	13 2-5	Atchison, Kan.
Edward Hurd Smith,	Ph. B.		Detroit.
Ernest Warner Smith,	B. S.	9 1-5	Pontiac.
Frank Clemes Smith,	B.S.(M.E.)	10 3-5	Bessemer.
Frederic Latta Smith,	Ph. B.	4 3-5	Lansing.
Oliver Charles Smith,	B.S.(C.E.)	5 3-5	Flint.
Reuben Sherman Smith,	A. B.	17 3-5	Grand Rapids.
George Herbert Snow,	Ph. B.	6 3-5	Winona, Minn.
Josephine Eliza Sondericker,	A. B.	9 4-5	Woodstock, Ill.
Fred Bernard Spaulding,	A. B.	13 3-5	Ann Arbor.
Charles Carl Spencer,	B. L.		Ann Arbor.
Ernest Marshall Sprague,	B.S.(C.E.)	17 3-5	Farmington.
Gordon Edward Stannard,	B.S.(Mech.E.)	13	Dexter.
Harry Alonzo Starr,	B. S.		Ludington.
Herbert Otto Statler,	A. B.		Berrien Springs.
Annette Stayt,	B. S.		Ann Arbor.
Grace Adele Stayt,	Ph. B.		Ann Arbor.

176 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Harmon Chamberlin St. Clair,	B. L.	13 3-5	Bay City.
Henry Porter Stearns,	B. S.	6 1-5	Adrian.
Wallace Holloway Steele,	B.S.(Chem.)	6 1-5	Ann Arbor.
Lettie Violet Stellberger,	A. B.		Ionia.
Edith Stevens,	B. L.		Niles.
Francis Leslie Stevenson,	B. L.	21 3-5	Detroit.
Clement Richilieu Stickney,	A. B.	12 1-5	Ann Arbor.
William Henry Stillhamer,	Ph. B.		Syracuse, Kan.
Paul Edwin Stillman,	A. B.		Jefferson, Ia.
Walter Savage Stillman,	A. B.	16 3-5	Council Bluffs, Ia.
John Edward Stillwell,	B. L.	21 3-5	Big Rapids.
Albert Brodie Stone,	Ph. B.	13 1-5	Fayetteville, Ark.
Albert French Storke,	A. B.		Milwaukee, Wis.
Margaret Jennie Stuart,	A. B.		Skaneateles, N. Y.
Herbert Joseph Stull,	B.S.(M.E.)	17	Rochester, N. Y.
John McDonald Stull,	B.S.(M.E.)		Rochester, N. Y.
Otho Sibley Stull,	B.S.(M.E.)	9 4-5	Rochester, N. Y.
Kate Eliza Sumner,	B. L.		Toledo, O.
Forest Glenwood Sweet,	Ph. B.	6 1-5	Battle Creek.
James Eli Talley,	A. B.	12 4-5	Brandywine Sum't, Pa.
Charles Philender Taylor,	Ph. B.	13 1-5	Ottawa, Ill.
Rufus Calvin Thayer,	Ph. B.		Northville.
Alvah Beech Thompson,	B. S.	8 2-5	San José, Cal.
Edgar Miller Thorpe,	Ph. B.		Detroit.
Julia Ruth Tolman,	A. B.	18 4-5	Chicago, Ill.
Lucius Edward Torrey,	B. L.	5 2-5	Grand Rapids.
Charles Orrin Townsend,	B. S.	19 1-5	Saline.
Edward Dwight Trowbridge,	B. S.		Detroit.
Lyman Benjamin Trumbull,	Ph. B.		Sandstone.
Alice Freeman Tryner,	Ph. B.		Bloomington, Ill.
Laura Oliver Tupper,	B. S.	19	Bay City.
William Hall Turnbull,	A. B.	3-5	Detroit.
May Turner,	B. L.	16 1-5	Saginaw.
Gabriel Cooley Tuthill,	B.S.(C.E.)		Ionia.
John Arthur Van Arsdale,	A. B.		Ann Arbor.
Oswald Daniel Vandersluis,	A. B.	6 2-5	Grand Rapids.
Horace Van Deventer,	Ph. B.	6 1-5	Clinton, Ia.
Raymond Elmoine Van Syckle,	B. S.	3-5	Detroit.
Ashley Joseph Vantine,	B. S.	3 3-5	Portland, Ore.
Martin Voorhees,	A. B.		Detroit.
Bert John Vos,	A. B.	16	Grand Rapids.
Gertrude Sibbald Wade,	Ph. B.		Ann Arbor.
Mulford Wade,	Ph. B.	4 2-5	Cleveland, O.
George Joseph Waggoner,	A. B.	19	Ravenna, O.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Ebenezer Franklin Walbridge,	B.S.(C.E.)15	3-5	Toledo, O.
George Morton Walker, Jr.,	B.S.(C.E.)	6 3-5	Lawrence, Kan.
Thaddeus Henry Walker,	B. S.		Walkerville, Ont.
William Edwin Walter,	A. B.		Cleveland, O.
Albert Walworth,	A. B.		South Bend, Ind.
Frank Alsworth Waples,	B.S.(Biol.)13		Ann Arbor.
Charles Damuth Warner,	A. B.		Battle Creek.
Edward Dodge Warner,	B. L.	2	Jackson.
Eugene Clarence Warriner,	B. L.		Paw Paw, Ill.
Edwin Elijah Washburn,	Ph. B.	18 3-5	Ann Arbor.
Carrie May Watson,	B. S.		Ann Arbor.
Charles Henion Webster,	B.S.(C.E.)12	2-5	Ann Arbor.
Charlotte Huntington Webster,	Ph. B.		Middletown, N. Y.
George Sherman Wells,	B.S.(Mech.E.)	2	Rochester.
Chester Wetmore,	B. S.	18 2-5	Allegan.
John Howard Wetmore,	B. L.	6	Cheboygan.
Sara Whedon,	A. B.	13 2-5	Ann Arbor.
Ellen Wheeler,	A. B.		Kalamazoo.
Henry Edward Whitaker,	B.S.(C.E.)22		Forest City, Ill.
Henry Kirk White,	Ph. B.	U.(5)	Owosso.
Laura E. Whitley,	A. B.	19	Coldwater.
Philip Robert Whitman,	B.S.(M.E.)13	4-5	Ann Arbor.
George Walton Whyte,	B.S.(Chem.)	19 1-5	Joliet, Ill.
Robert Bruce Wilcox,	B.S.(C.E.)	7 3-5	Chicago, Ill.
Thomas Lee Wilkinson,	B.S.(Mech.E.)63-5		Davenport, Ia.
Gardiner Stewart Williams,	B.S.(C.E.)21	2-5	Saginaw.
Harry John Williams,	B.S.(Mech.E.)20	4-5	New Rockland, Quebec.
Mark William Williams,	A. B.	4 4-5	Ann Arbor.
Elmer Grant Willyoung,	B. S.	19 1-5	Detroit.
Edward Markley Wilson,	Ph. B.		Wabash, Ind.
Florence Edna Wilson,	Ph. B.	5 3-5	Belding.
Zada J. Wilson,	Ph. B.	11 4-5	Belding.
Horace Vaughn Winchell,	B. S.	12 3-5	Minneapolis, Minn.
Frank Wintrode,	A. B.	9 4-5	Huntington, Ind.
Jennie Louise Wire,	Ph. B.	8	Winslow, Ill.
Charles Shepard Withey,	Ph. B.	5	Grand Rapids.
Robert Henry Wolcott,	B.S.(Biol.)	3	Grand Rapids.
Irving Mason Wolverton,	B.S.(C.E.)	6	Flint.
James Burris Wood,	B. S.	10 4-5	Pittsburgh, Pa.
Leslie Henry Wood,	Ph. B.	2-5	Owosso.
Edward James Woodworth,	A. B.		Fort Wayne, Ind.
Bertha Hammond Wright,	A. B.	16 4-5	Port Huron.
Harry Bissell Wyeth,	B. L.	16 1-5	St. Louis, Mo.
Arlisle Margaret Young,	A. B.	15 3-5	Grand Rapids.
Lewis Smith Young,	B. L.	13	Harvard, Ill.

STUDENTS NOT CANDIDATES FOR A DEGREE.

NAME.	RESIDENCE.
Thomas Adams, LL. B.,	<i>Parawan, Utah.</i>
John Burns Alexander,	<i>Buchanan.</i>
Bertha Montague Alger,	<i>Grand Rapids.</i>
Harry Lincoln Allen,	<i>Cleveland, O.</i>
Helen Elvise Ames,	<i>Ann Arbor.</i>
Elliott Talbot Austin,	<i>Ann Arbor.</i>
Charles Ebenezer Babcock,	<i>Necedah, Wis.</i>
Ernest Bacon,	<i>Niles.</i>
Rolla Joseph Baldwin,	<i>Ann Arbor.</i>
Joseph Biscomb,	<i>Grand Rapids.</i>
Ella Bogue,	<i>Spiceland, Ind.</i>
Charlie Ambrose Bowen,	<i>Marathon, O.</i>
Ada Louese Boyce,	<i>Port Huron.</i>
Eugene Frank Bradt,	<i>Marcellus.</i>
Ida Victoria Bradt,	<i>Marcellus.</i>
Elmer Ellsworth Brown,	<i>Normal, Ill.</i>
Mary Barbour Brown,	<i>Louisville, Ky.</i>
Sally Brown,	<i>Louisville, Ky.</i>
Clarence Marion Browne,	<i>Portland.</i>
Ella Buck,	<i>Franklin Grove, Ill.</i>
Wolcott Hackley Butler, LL. B.,	<i>Allegan.</i>
Anna Laura Cadogan,	<i>Hornellsville, N. Y.</i>
Otta Lizzie Caldwell,	<i>Kansas City, Mo.</i>
William Aulls Campbell, M. D.,	<i>Ann Arbor.</i>
Lavant Z. Caukin,	<i>Sparta.</i>
Cora May Chapman,	<i>Ann Arbor.</i>
Jeannette Clafin,	<i>Toledo, O.</i>
Ardie Marian Clark,	<i>Ann Arbor.</i>
Anton Henry Classen, LL. B.,	<i>Ann Arbor.</i>
Helen Mary Cleveland,	<i>Holyoke, Mass.</i>
Benjamin Cluff, Jr.,	<i>Provo City, Utah.</i>
Allen Lysander Colton,	<i>Detroit.</i>
Lydia Cardelle Condon,	<i>Ann Arbor.</i>
Nora Josephine Cooney,	<i>Fort Smith, Ark.</i>
Mary Bell Cox,	<i>Rose Lawn, Ind.</i>
Mary Edna Dowdigan,	<i>Ann Arbor.</i>
Fred Trempe Ducharme,	<i>Detroit.</i>
Helen Mar Durfee,	<i>Marion, N. Y.</i>
Frank Gottlieb Easterday,	<i>Jackson.</i>
William Franklin Edwards,	<i>Niles.</i>
Amanda Elliott,	<i>Dublin, Ind.</i>
Charles Edmund Filkins,	<i>Burton.</i>

NAME.	RESIDENCE.
Will Fowler,	<i>Wabash, Ind.</i>
John Evans Gernand,	<i>Rossville, Ill.</i>
Andrew Ellsworth Gibson,	<i>Ann Arbor.</i>
Ada Murray Gilbert,	<i>Ann Arbor.</i>
Robert Kidd Gowanlock,	<i>Oscoda.</i>
John Evenson Granrud, A. B., Norwegian Luther College.	<i>Pelican Rapids, Minn.</i>
Daniel Phillip Grant,	<i>Burlington, Ind.</i>
Alice Annable Graves,	<i>Bloomington, Ill.</i>
Arthur Horace Griggs,	<i>Crown Point, Ind.</i>
Fannie May Groves,	<i>Ann Arbor.</i>
Franklin Walter Guiteau,	<i>Ann Arbor.</i>
Mary Harned,	<i>Philadelphia, Pa.</i>
William Pickett Harris,	<i>Detroit.</i>
Clark Center Hawes,	<i>Ann Arbor.</i>
Edna Gertrude Hayden,	<i>Medina, O.</i>
William Lincoln Honnold,	<i>Camp Point, Ill.</i>
Charles Arthur Howell,	<i>Detroit.</i>
Marietta Hubbard,	<i>Hinckley, Ill.</i>
Charles Sumner Hyde,	<i>Grayling.</i>
David Lancaster Hyde,	<i>Ann Arbor.</i>
Kakutaro Itaya, LL. B.,	<i>Tokio, Japan.</i>
Alfred Eugene Jennings,	<i>Decatur.</i>
Walter Joseph Osborne Johnson,	<i>Taylorville, Ill.</i>
Henry Thomas Jones, Jr.,	<i>Chicago, Ill.</i>
Edwin Horace Kelley,	<i>Fostoria, O.</i>
Isabelle Kellogg,	<i>Detroit.</i>
Harriet Moseman Kennedy,	<i>Ionia.</i>
Lee Rockwell Kinnear,	<i>Henry, Ill.</i>
Amanda Kirby,	<i>Battle Creek.</i>
Louise Rogers Kirkpatrick,	<i>Battle Creek.</i>
Seth Wells Knight,	<i>Utica.</i>
Charles Knott,	<i>South Bend, Ind.</i>
Solomon Gentzler Lehmer,	<i>McPherson, Kan.</i>
Clem Charles Lemon,	<i>Ann Arbor.</i>
John Edgar Lessey,	<i>Bedford, Ind.</i>
Kittie Loughnane,	<i>Lapeer.</i>
Louise Lunsford Loving,	<i>Ann Arbor.</i>
George Nelson Lowrey,	<i>Ann Arbor.</i>
Robert Lincoln Mack,	<i>Joliet, Ill.</i>
Lincoln Macmillan,	<i>Ann Arbor.</i>
Hedwig Marie Maul,	<i>Kewanee, Ill.</i>
Eugene Alphonsus McFarland,	<i>Leavenworth, Kan.</i>
Margaret Merrill,	<i>East Saginaw.</i>

NAME.	RESIDENCE.
Wilbur Middlekauff,	<i>Forreston, Ill.</i>
Aura Miller,	<i>Ann Arbor.</i>
Grace Eliza Moore,	<i>Delphi, Ind.</i>
William Potwin Morgan,	<i>Highland Park, Ill.</i>
James Burton Nelson,	<i>Bloomington, Ind.</i>
Andrew Richard Nichols,	<i>Beach City, O.</i>
John Alden Nichols,	<i>Ann Arbor.</i>
Frank Burt Olney,	<i>Ludington.</i>
Ella Lewis Palmer,	<i>Jackson.</i>
David Paull,	<i>Calumet.</i>
Newton Barris Pierce,	<i>Ludington.</i>
Statia Pritchard,	<i>Calliope, Ia.</i>
Belle Roberts,	<i>Westfield, Ind.</i>
Edwin J. Roberts,	<i>Westfield, Ind.</i>
Lillie Emma Rosewarne,	<i>Decatur.</i>
William Harvey Rush,	<i>Greenville, O.</i>
Morgan Clement Shafer,	<i>Findlay, O.</i>
Carl August Ludwig Schmidt,	<i>Adrian.</i>
Annie Amelia Schryver,	<i>Ann Arbor.</i>
Herbert Bradish Shoemaker,	<i>Ann Arbor.</i>
Fred Myron Sisson,	<i>Allegan.</i>
Evelyn Amanda Smith,	<i>Ann Arbor.</i>
Laura Eunice Sprague,	<i>Naples, N. Y.</i>
Wilfred Dudley Stearns,	<i>Boston, Mass.</i>
Frank Alexander Steiger,	<i>Vacaville, Cal.</i>
Cornelia Steketee,	<i>Grand Rapids.</i>
Sophronia Leland Stevens,	<i>Ann Arbor.</i>
Herbert Amos Thompson,	<i>St. Johns.</i>
Isabel Toan,	<i>Lyons.</i>
Susie Toan,	<i>Lyons.</i>
Seiichi Tokito,	<i>Tokio, Japan.</i>
Ada Louise Upson,	<i>Ann Arbor.</i>
Ida Grant Walker,	<i>Jacksonville, Ill.</i>
Joseph A. Watson,	<i>Coldwater.</i>
Alice Booth Wheeler,	<i>Saline.</i>
George Alexander Wheeler,	<i>Northfield, Minn.</i>
Ella Juliette Wiggins,	<i>Three Mile Bay, N. Y.</i>
Nathan Putnam Wood,	<i>Dubuque, Ia.</i>
Lucius Pride Yale,	<i>Austin, Ill.</i>
Anna Olivia Yeaton,	<i>Winona, Minn.</i>
Rei kichi Yoshida,	<i>Fukuoka Ken, Japan.</i>

DEPARTMENT
OF
Medicine and Surgery.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

* ALONZO B. PALMER, M. D., LL. D.,

CORYDON L. FORD, M. D., LL. D.,

DEAN.

ALBERT B. PRESCOTT, PH. D., M. D.,

GEORGE E. FROTHINGHAM, M. D.,

DONALD MACLEAN, A. M., M. D.,

EDWARD S. DUNSTER, A. M., M. D.,

JOHN W. LANGLEY, S. B., M. D.,

HENRY SEWALL, PH. D.,

WILLIAM J. HERDMAN, PH. B., M. D.,

VICTOR C. VAUGHAN, PH. D., M. D.,

CHARLES H. STOWELL, M. D.,

HENEAGE GIBBES, M. D.,

† HENRY F. LYSTER, A. M., M. D.

HENRY WADE ROGERS, A. M.,

Lecturer on the Law relating to Physicians.

GEORGE A. HENDRICKS, M. S., M. D.,

CONRAD GEORGE, M. D.,

JAMES N. MARTIN, PH. M., M. D.,

CHARLES K. MCGEE, A. B.,

* Died December 23, 1887.

† Appointed February 17, 1888, Professor of the Theory and Practice of Medicine and Clinical Medicine.

WILLIAM A. CAMPBELL, M. D.,

SECRETARY.

THOMAS C. PHILLIPS, B. S., M. D.,

JOSHUA S. BLANCHARD, M. D.,

GOTTHELF C. HUBER, M. D.,

ELMER SANFORD, B. S.

STUDENTS.

RESIDENT GRADUATES.

NAME.	RESIDENCE.
Hagop B. Asadoorian, M. D., Central Turkey College.	<i>Aleppo, Turkey.</i>
James Grassick, M. D., Rush Medical College.	<i>Buxton, Dak.</i>

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Christine K. Anderson, B. S., Knox College.	<i>Greene, Ia.,</i>	Faculty.
James Henry Anderson,	<i>Constantine,</i>	B. P. Schoville.
Lewis John Carrick Bailey,	<i>New Glasgow, N. S.</i>	Faculty.
Coryadon Orlan Beardsley,	<i>Ottawa, O.,</i>	C. E. Beardsley.
Lewis Jerome Belknap,	<i>Battle Creek,</i>	J. H. Kellogg.
Alexander Jay Braden,	<i>Battle Creek,</i>	Faculty.
Francis William Brewer,	<i>Southampton, Eng.,</i>	Faculty.
Ered L. Burdon,	<i>Southerland's Corners, Ont.,</i>	W. F. Roome.
Frank Chaffee,	<i>Saginaw,</i>	Faculty.
Joshua Monocton Chesebro,	<i>Ann Arbor,</i>	H. M. McKay.
Oramel Ozro Chesebro,	<i>Ann Arbor,</i>	G. H. Ney.
Arthur Hamilton Coe,	<i>Ft. Assinniboine, Mont.,</i>	F. J. Adams.
Frantz Hunt Coe, A. B.,	<i>Ann Arbor,</i>	Faculty.
Madison James Conant, A. B., Kalamazoo College.	<i>New Baltimore,</i>	R. C. Leacock.
George Hall Conklin,	<i>Battle Creek,</i>	Faculty.
Mary Maria Cutler,	<i>Fisher Station,</i>	Faculty.
Mary Gage Day,	<i>Bellefonte, Kan.,</i>	Burt G. Wilder.
Celia Louise Dowse, A. M., Alfred University.	<i>Whitehall,</i>	J. H. Kellogg.
John Whalen Doyle,	<i>Ann Arbor,</i>	Faculty.
Herbert P. Ewell, Ph. C.,	<i>Utica,</i>	Faculty.
Earl Fairbanks,	<i>Luther,</i>	H. W. Hammond.
Josa Theresa Fleming,	<i>Dexter,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Charles A. Fletcher, M. S., Kalamazoo College.	Kalamazoo,	Faculty.
Zeri H. Fodrea,	Westfield, Ind.,	Faculty.
Paul Smith Fox,	Moorepark,	Faculty.
Benjamin Nathan Gardner,	Okemos,	Faculty.
Elmer Daley Gardner,	Lapeer,	Faculty.
Jefferson Gould,	Grand Blanc,	Faculty.
Will Lyman Griffin, B. S., Albion College.	Ann Arbor,	E. L. Parmenter.
Frederick Smith Heller,	Oak Harbor, O.,	U. H. Williams.
Nellie Anna Hollister,	Norwalk, O.,	A. L. Osborn.
Clementine L. Houghton, B.L.,	Ann Arbor,	Faculty.
Henry Hulst, A. M., Hope College.	Grand Rapids,	Faculty.
James Gordon Jackson,	Muskegon,	Faculty.
Marcus Whitfield Jewell,	Pontiac,	Faculty.
Adrian Reginald Karreman,	Grand Rapids,	Louis Barth.
Horace Manley Lane,	Carthage, Mo.,	H. M. Lane.
Lida Powers Leasure,	Auburn, Ind.,	Faculty.
Bradford Churchill Loveland,	Clifton Springs, N. Y.,	Faculty.
James Gifford Lynds,	Hopewell, N. B.,	Faculty.
Charles Webster Macdade,	Hagerstown, Md.,	R. T. Harman.
William Francis Metcalf,	Bayside, Ont.,	J. Campbell.
Delbert Joseph Miller,	North Benton, O.,	Faculty.
Mary Howell Miller,	Detroit,	Faculty.
John Isaac Newcomb,	Fayette, O.,	Faculty.
Zeovia Owen,	Dansville, N. Y.,	E. D. Leffingwell.
Frances Peele,	Philadelphia, Pa.,	Faculty.
Ida May Porter,	Connellsville, Pa.,	Faculty.
Vernet Edward Prevost,	Tunkhannock, Pa.,	H. W. Chase.
Bert Bessac Rowe,	Manchester,	Faculty.
Henry William Schmidt,	Manchester,	J. A. Lynch.
Douglas Sewall,	Ann Arbor,	Faculty.
John Frederick Siefert,	New Hamburg, Ont.,	Faculty.
Belle Hamilton Smith,	St. Johns,	Faculty.
Kate Snyder, A. B., Indiana University.	Ann Arbor,	Faculty.
Willis Edward Sterrs,	Montgomery, Ala.,	Faculty. [ter.
Mary Strong,	Omaha, Neb.,	E. K. Ogden and J. Car-
Edith Estella Taylor,	Tompkinsville, Pa.,	Faculty.
Thomas Henry Trainor,	Ottawa, Ill.,	Faculty.
Bertha Van Hoosen, A. B.,	Rochester,	Faculty.
Amos Solon Wheelock,	Bridgewater,	Faculty.
Horace Wilcox,	Wakefield, R. I.,	Faculty.
Seymour Syria Williams,	Tarkio, Mo.,	Faculty.

SECOND YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Christopher Adamson,	<i>Edgerton, Wis.,</i>	Faculty.
Adrian Richard Alfred,	<i>Jeddo,</i>	Faculty.
Leighton Pine Allen,	<i>South Bend, Ind.,</i>	Faculty.
Bion Arnold,	<i>Ypsilanti,</i>	Faculty.
Lizzie Daniel Rose Atkinson,	<i>West Newton, Mass.,</i>	Faculty.
Eunice Jemima Avery,	<i>Hillsdale,</i>	Faculty.
Thomas James Avery,	<i>Ann Arbor,</i>	Faculty.
Thomas Stewart Blair,	<i>Chambersburgh, Pa.,</i>	George S. Hull.
John Alexander Blake,	<i>Surry, N. B.,</i>	Faculty.
Carroll Osborne Boyce,	<i>Auburn, N. Y.,</i>	J. P. Creveling.
George Johnson Boyd,	<i>Black Hawk, Pa.,</i>	T. G. Boyd.
John Ackley Boylan,	<i>Ann Arbor, —</i>	Faculty.
George Alfred Bradburn,	<i>Tilsonburg, Ont.,</i>	E. X. Amoss.
Samuel David Bradley,	<i>Kincardine, Ont.,</i>	J. McCrimmon.
James Ritchison Breakey,	<i>Pere Cheney,</i>	W. F. Breakey.
Mary Brown,	<i>Detroit,</i>	Faculty.
Mathilde Buck,	<i>Philadelphia, Pa.,</i>	Faculty.
Henry Clay Burcham,	<i>Scott Town, O.,</i>	D. M. Thomas.
Charles Newell Burton,	<i>Union City,</i>	Faculty.
Emily Adelia Cady, A. B.,	<i>Brookport, N. Y.,</i>	William B. Mann.
Vassar College.		
Francis Harvey Callow, B. S.,	<i>Paw Paw,</i>	Faculty.
Hillsdale College.		
James Duncan Campbell,	<i>Muskegon,</i>	Faculty.
Harry Lee Canright,	<i>Battle Creek,</i>	Faculty.
Charles Ogden Cartwright,	<i>Fowlerville,</i>	J. A. Ingram.
Elizabeth Janette Child,	<i>Bethel, Vt.,</i>	Faculty.
James Edward Childs,	<i>Temple, N. H.,</i>	Faculty.
Cassius Mentor Coldren,	<i>Hillsdale,</i>	Faculty.
William S. Connery,	<i>East Saginaw,</i>	C. H. Sample.
David Goldthwait Coolidge,	<i>Orange, Mass.,</i>	Faculty.
George Lanning Cramer,	<i>Burton,</i>	O. B. Campbell.
Charles Stanley Crane,	<i>Bathgate, Dak.,</i>	M. Sutton.
William Adams Davis,	<i>Cazenovia, N. Y.,</i>	Faculty.
John Sedgwick Dean,	<i>Ann Arbor,</i>	Faculty.
Joseph Chambers Dodds, B. L.,	<i>Sodus, Ill.,</i>	Faculty.
University of Illinois.		
Will Henry Dodge,	<i>Panama, N. Y.,</i>	Faculty.
William Charles Elliott,	<i>Pontiac,</i>	Faculty.
Edward Jacob Carpenter Ellis,	<i>Hillsdale,</i>	Faculty.
Lincoln Garry Ennes,	<i>Findlay, O.,</i>	Faculty.
Fred W. Essig,	<i>Owosso,</i>	Faculty.
Jessica White Findlay,	<i>Toronto, Ont.,</i>	Faculty.

STUDENTS.

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NAME.	RESIDENCE.	PRECEPTOR.
Joseph E. Fopeano,	<i>Kersey, Pa.,</i>	E. T. Williams.
Corydon Lavine Ford,	<i>Dundee,</i>	H. C. Wyman.
Charles Henry Fowler, A. B., Lincoln University.	<i>Detroit,</i>	C. S. Pratt.
Christian Seehuusen Fries,	<i>Altoona, Pa.,</i>	Faculty.
Frank Richard Gardiner,	<i>Mount Forest, Ont.,</i>	Faculty.
William Henry Gilbert,	<i>Evansville, Ind.,</i>	A. M. Hayden.
James Skiffington Grant,	<i>St. Stephen, N. B.,</i>	Faculty.
Fanny Sarah Crossett Hall,	<i>Ithaca, N. Y.,</i>	Faculty.
Franklin Pierce Hannon,	<i>Warsaw, N. Y.,</i>	Faculty.
Elden William Hills,	<i>Petoskey,</i>	Faculty.
Katherine Holden,	<i>Jamestown, Dak.,</i>	Faculty.
Peter William Holleman, A. B., Hope College.	<i>Holland,</i>	Faculty.
Alex F. Irwin,	<i>Chatham, Ont.,</i>	Holmes & McKeough.
John Linn Irwin, Ph. C.,	<i>Detroit,</i>	Faculty.
George Orlo Jefferson,	<i>Mankato, Minn.,</i>	J. W. Andrews.
Cornelius Adrian Johason,	<i>Grand Rapids,</i>	S. C. Graves.
Walter James Johnson,	<i>Oscoda,</i>	Faculty.
John William Keating,	<i>Ann Arbor,</i>	Faculty.
Lewis Hasbrouck Kemble,	<i>Stone Ridge, N. Y.,</i>	G. E. Buell.
Fannie Kyle,	<i>Champaign, Ill.,</i>	Faculty.
Benjamin Franklin Larrick,	<i>Jacksonville, Ill.,</i>	Faculty.
Andrew Stewart Lobingier, A. B.,	<i>Mt. Pleasant, Pa.,</i>	Faculty.
Asbury Nelson Loper, B. S., Iowa Wesleyan University.	<i>Kossuth, Ia.,</i>	J. T. Axtell.
John A. MacLeod,	<i>Mt. Morris,</i>	N. J. Brown.
Willis Allen McConkie,	<i>Walton,</i>	J. J. McConkie.
Archibald McEacheran,	<i>Crinan, Ont.,</i>	Faculty.
Charles McGregor,	<i>Dayton, O.,</i>	Faculty.
Harry McKennan,	<i>Herkimer, N. Y.,</i>	H. McKennan.
George Stewart McPherson,	<i>Toronto, Ont.,</i>	Faculty.
Andrew Milton Miller,	<i>Ann Arbor,</i>	Faculty.
DeWitt Clinton Rench Miller, Pennsylvania College.	<i>A. B., Hagerstown, Md.,</i>	Victor D. Miller.
Josephine Milligan, A. M., Smith College.	<i>Jacksonville, Ill.,</i>	David Prince.
Clarence Jennings Miner,	<i>Ann Arbor,</i>	Faculty.
William Levi Moore,	<i>Hastings,</i>	G. W. Lowry.
Perry Harris Munger,	<i>Alpha, O.,</i>	A. M. Allen.
Walter Starnes Nash,	<i>Winchester, Ky.,</i>	M. S. Brown.
Mary Anna Norton,	<i>Detroit,</i>	Faculty.
Clara Augusta Oswald,	<i>Ann Arbor,</i>	Faculty.
Ernest Henry Parker,	<i>Osawatomie, Kan.,</i>	E. H. Knapp.
Wallace Asahel Parker,	<i>Detroit,</i>	N. F. Brown.

NAME.	RESIDENCE.	PRECEPTOR.
John Allen Parks,	Utica, O.,	J. W. McMillen.
Edward Peirce,	New Bedford, Mass.,	Faculty.
Samuel Lee Probert,	St. Charles, Ill.,	H. Y. Longacre.
Frank Rainie,	Senecaville, O.,	A. R. Cain.
Kate Reynolds, A. B.,	Mt. Pleasant, Ia.,	Faculty.
Vassar College.		
Sylvanus Robillard,	Wyoming, Ont.,	A. E. Harvey.
George Austin Rowe,	Waterloo,	Faculty.
James Newton Saint,	East Liverpool, O.,	A. S. Brubaker.
George John Schneider,	Woodstock, Ill.,	D. C. Green.
Scott Searles,	Nicollet, Minn.,	Faculty.
Howard Sedgwick,	Peoria, Ill.,	Faculty.
Albert Morton Shaw,	Coesse, Ind.,	Faculty.
Boghos Tevan Simonian,	Palu, Turkey,	Faculty.
William Milton Slaght, A. B.,	Grand Blanc,	A. Slaght.
Olivet College.		
George Slocum,	Sherwood, N. Y.,	B. A. Fordyce.
William Addison Smith,	Odessa, N. Y.,	O. S. Ensign.
Fred Heman Spaulding,	Wayland,	Faculty.
Minnie Ellen Stacks,	Crary's Mills, N. Y.,	G. G. Monroe.
Philip McClellan Steckman,	Trenton, Mo.,	H. J. Turner.
Frederick Wiley Stevens, B. S.,	Eaton Rapids,	Faculty.
Edgar Tripp Stephenson,	Adrian,	R. Stephenson.
George Elwin Sylvester,	LaFargeville, N. Y.,	Faculty.
Hugh Seymour Townsend,	Saline,	W. J. Herdman.
Wadsworth Warren, A. B.,	Lansing,	A. D. & J. W. Hagadorn.
Olivet College.		
William Bennajah Watts,	Unadilla,	Faculty.
Robert Westphal, Jr.,	South Bend, Ind.,	A. J. Wagner.
George Raymond Wright,	Chelsea,	G. W. Palmer.
Samuel Ellsworth Yoder,	Hawpatch, Ind.,	Iris J. Vaughan.

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Lotta Ruth Arwine,	Columbus, Ind.,	Faculty.
Lyle Chalwell Bacon,	Niles,	Faculty.
Oscar Baert,	Zeeland,	Johnson & Boise.
Cornelius Arthur Barnett,	Ogdensburg, N. Y.,	C. C. & J. W. Benton.
John A. Barnett,	Potsdam, N. Y.,	Faculty.
Merritt Grant Bassett,	Saline,	Faculty.
George Bates,	Arkona, Ont.,	Faculty.
Henry Benjamin Becker,	Zurich, Ont.,	Faculty.
Lora Whittemore Beebe,	Manistee,	C. V. Beebe.
Thekla Natalie Bengel,	Hannibal, Mo.,	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
John Francis Bennett,	<i>Salem,</i>	Faculty.
Joseph D. Bennett,	<i>Litchfield,</i>	L. A. Howard.
Joseph Esterbrook Bennett,	<i>Wayne,</i>	E. O. Bennett.
Fannie Lewis Bishop,	<i>Rockfield, Ind.,</i>	Faculty.
Milo Jason Bradley,	<i>Reed City,</i>	Morse Stewart, Jr.
Frank Homes Brown,	<i>Dansville, N. Y.,</i>	F. M. Perene.
William Summers Brownell,	<i>Utica,</i>	Faculty.
Frank Marion Bruner,	<i>Eureka, Ill.,</i>	Faculty.
Charles Carlos Burnett,	<i>Cleveland, O.,</i>	Faculty.
Angus Raymond Carton,	<i>Ackley, Ia.,</i>	Faculty.
James Trent Christison,	<i>Ingersoll, Ont.,</i>	E. C. Eshelly.
Allen Benson Clark,	<i>Dyson's, O.,</i>	J. A. Kackly.
Allen Cone,	<i>Piffard, N. Y.,</i>	F. H. Moyer.
Clark Elija Congdon,	<i>Auburn, N. Y.,</i>	A. H. Brown.
Daniel Conley,	<i>Lapeer,</i>	Faculty.
William Cleland Conley,	<i>Nashville,</i>	Faculty.
Rufus James Coultas, B. S., Illinois College.	<i>Virden, Ill.,</i>	Faculty.
Edward Wirt Cox,	<i>Cox's Landing, W. Va.,</i>	Faculty.
George Clinton Crandall, B. S., Michigan Agricultural College.	<i>Linden,</i>	Faculty.
Arthur Pearl Crofts,	<i>Grass Lake,</i>	Mahlon H. Raymond.
Robert Chester Dundass,	<i>Ludington,</i>	E. N. Dundass.
Elmer Ellsworth Eddy,	<i>LaFargeville, N. Y.,</i>	C. L. Jones.
Robert Cleland Farr,	<i>Port Huron,</i>	Faculty.
George Hill Ferguson,	<i>Gobles,</i>	Faculty.
Mary Graves Finch,	<i>Gladwin,</i>	R. E. Finch.
Arthur Ferdinand Fischer,	<i>Sherrills, Ia.,</i>	Faculty.
John Fleming,	<i>Dexter,</i>	Faculty.
William Fowler,	<i>Bright, Ont.,</i>	Faculty.
William P. French,	<i>Kalamazoo,</i>	Faculty.
Conway Alonzo Frost,	<i>Detroit,</i>	G. P. Andrews.
George Edward Frothingham, Jr.,	<i>Ann Arbor,</i>	G. E. Frothingham.
Amaziah Gatchell, A. M., Bates College.	<i>Bay City,</i>	C. C. Jaques.
Willie Clarence Gates,	<i>Clifford, Pa.,</i>	Faculty.
George Clifton Gay,	<i>Eagle Bridge, N. Y.,</i>	Faculty.
Charles Augustus Gottman,	<i>Beech,</i>	Faculty.
John Gould,	<i>Colorado Springs, Col.,</i>	Faculty.
Samuel H. Graham,	<i>Cedar Rapids, Ia.,</i>	French & Crawford.
Walter Jesse Green,	<i>Ann Arbor,</i>	G. W. Green.
Charles Edward Greene,	<i>Port Huron,</i>	Faculty.
Walter Thomas Hagen,	<i>Green Bay, Wis.,</i>	W. H. Bartran.
Elmer Ellsworth Hagler,	<i>Virden, Ill.,</i>	Faculty.
Emmett Austin Hall,	<i>Folk, O.,</i>	S. B. McGarran.

NAME.	RESIDENCE.	PRECEPTOR.
Emma Wheat Hastings,	<i>Quincy,</i>	E. A. Follansbee.
Peter Aloysius Hayden,	<i>Cohoes, N. Y.,</i>	Faculty.
Wilber Stephen Henderson,	<i>Port Huron,</i>	Faculty.
Eugene P. Hickok, A. B.,	<i>Owatonna, Minn.,</i>	E. M. Morehouse.
Carlton College.		
Minnie Agnes Howard,	<i>Kalamazoo,</i>	Faculty.
John Gerrit Huizinga,	<i>Holland,</i>	T. G. Huizinga.
George Malcolm Hull,	<i>Brighton,</i>	Faculty.
Albert Milton Humber,	<i>Dundee,</i>	Kenneth Gunsolus.
John H. Hunt,	<i>Burrton, Kan.,</i>	Faculty.
George William Ingham,	<i>Algona, Ia.,</i>	Faculty.
Joseph Philip Jones,	<i>Dundee,</i>	Faculty.
Melvin Emmanuel Johnson,	<i>Paxton, Ill.,</i>	Faculty.
Napoleon Dudley Kean,	<i>Olathe, Kan.,</i>	J. Q. Egelston.
George Frederick Keiper, A.B.,	<i>LaFayette, Ind.,</i>	C. B. Keiper.
De Pauw University.		
Milton Jennea Longworth,	<i>Spencerville, O.,</i>	J. B. Funk.
Frank D. Lydick,	<i>Paris, Ill.,</i>	C. S. Laughlin.
Alexander MacRae,	<i>Lake Linden,</i>	John MacRae.
Horace Albert Macy,	<i>Baker's Corner, Ind.,</i>	Faculty.
John Jacob Marker,	<i>Wayne,</i>	Thomas Morrison.
Ettie McCaughna,	<i>Ann Arbor,</i>	Faculty.
Mary McConahy,	<i>Durham, Wis.,</i>	Faculty.
Jacob Crawford McCormick,	<i>Iosco,</i>	W. C. Bennett.
Allan Z. McDonald,	<i>Black River,</i>	Faculty.
Lillie McGowan,	<i>West Liberty, Ia.,</i>	Faculty.
William Arthur McGugan,	<i>Newbury, Ont.,</i>	Faculty.
George Edwin McKean,	<i>Dundee, O.,</i>	W. McKean.
Eva Elizabeth McKnight,	<i>Sterling Valley, N. Y.,</i>	Faculty.
William Goldsmith McLachlan,	<i>Wardsville, Ont.,</i>	Faculty.
Malcolm Grame McNiven,	<i>Blenheim, Ont.,</i>	Faculty.
Elizabeth McNutt,	<i>Hastings,</i>	Faculty.
David Henry Miller,	<i>Lacey,</i>	A. L. Van Horn.
Robert Eugene Miller,	<i>Leyden, N. Y.,</i>	Faculty.
Willis L. Moore,	<i>Hillsdale,</i>	E. E. Moore.
Fred William Neal,	<i>Grand Rapids,</i>	Faculty.
Mary Elizabeth Newcomb,	<i>Blissfield,</i>	Faculty.
Edgar Shane Newlin,	<i>Richmond, Ind.</i>	Edwin Hadley.
Edgar Warren Oswald,	<i>Ann Arbor,</i>	Faculty.
Charles Allen Otis,	<i>St. Paul, Minn.,</i>	Faculty.
Budson Albert Palmer,	<i>Shetland, Ont.,</i>	Faculty.
Benjamin Franklin Parrish,	<i>Midway, Ky.,</i>	Faculty.
William Mason Payne,	<i>Hillsdale,</i>	Faculty.
Carl Anton Petersain,	<i>Muskegon,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
William Philip Pfisterer,	<i>New Ulm, Minn.,</i>	O. C. Strickler.
Francis Malcolm Phillips,	<i>Salina, Kan.,</i>	W. A. Phillips.
Adelle Priscilla Pierce, A. M.,	<i>Saginaw,</i>	Faculty.
Albion College.		
Herbert Adelbert Powers,	<i>Dowling,</i>	A. L. Van Horn.
Thomas Harvey Ransom,	<i>South Haven,</i>	W. C. Ransom.
Mary Hannah Ratcliffe,	<i>Medina, N. Y.,</i>	Faculty.
Charles Reitz,	<i>Union Hill, N. Y.,</i>	J. S. Brandt.
Robert Edward Lee Rodgers, A. B.,	<i>Millsboro, Pa.,</i>	S. S. Rodgers.
Trinity College.		
Arthur Shoudy Rowley,	<i>Kalamazoo,</i>	Faculty.
James Bringham Ryan,	<i>Virden, Ill.,</i>	Faculty.
Walter Neale Salisbury,	<i>Midland,</i>	Faculty.
Arthur W. Scidmore,	<i>Grass Lake,</i>	Mahlon H. Raymond.
James Clifford Scott,	<i>New Britain, Pa.,</i>	J. E. Groff.
Albert William Sherman,	<i>Ann Arbor,</i>	Faculty.
Charles Shickle,	<i>Carland,</i>	J. H. Travis.
Roland Edward Skeel,	<i>Cleveland, O.,</i>	C.B. & W. H. Humiston.
James Ephraim Smedley,	<i>Belvidere, Ill.,</i>	Faculty.
Charles Sohn,	<i>Woodlawn, Pa.,</i>	Faculty.
George Henry Thomas Sparling,	<i>Seattle, W. T.,</i>	H. M. Hall.
Willard Starks,	<i>Chatham, N. Y.,</i>	Faculty.
Wesley Benjamin Steenburg,	<i>Topeka, Kan.,</i>	Stormont & Alexander.
Patrick Joseph Sullivan,	<i>Grattan,</i>	Faculty.
Lafayette Swanton,	<i>Edenville,</i>	Faculty.
Koh Ichi Takasaki,	<i>Tokio, Japan,</i>	Faculty.
Arthur John Taylor,	<i>Hop Bottom, Pa.,</i>	Faculty.
William Sherman Taylor,	<i>Ann Arbor,</i>	Faculty.
Emily Parker Ten Eyck,	<i>Meriden, Conn.,</i>	Faculty.
Charles Edward Thomas,	<i>St. Clair,</i>	Faculty.
John Wesley Tildon, A. B.,	<i>Detroit,</i>	Faculty.
Lincoln University.		
Edwin Stuart Tisdall,	<i>Simcoe, Ont.,</i>	Faculty.
Elizabeth Martha Trowbridge,	<i>Pontiac,</i>	Faculty.
Alice Van Hoosen, A. B.,	<i>Rochester,</i>	Faculty.
William Evert Visscher, A. B.,	<i>Holland,</i>	Faculty.
Hope College.		
James Henry Waite,	<i>Centre White Creek, N. Y.,</i>	Faculty.
Fred Eugene Warren,	<i>Dexter,</i>	Faculty.
Stephen Andrew Whinery,	<i>Grand Rapids,</i>	William F. Hake.
Cressy Livingston Wilbur, Ph. B.,	<i>Hillsdale,</i>	Charles W. Wilbor.
Hillsdale College.		
John Russell Wilde,	<i>New York, N. Y.,</i>	Faculty.
Clarence Benjamin Wilson,	<i>Bradford, Vt.,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Freeman E. Wilson,	<i>Eden, Ont.,</i>	L. Harvey & U. M. Stanley.
James Wilson,	<i>Wabash, Ind.,</i>	Smith & Blount.
Franklin E. Wolfe,	<i>Ortonville,</i>	Faculty.
William D. Wood,	<i>Forest Grove, Ore.,</i>	Faculty.

Department of Law.

FACULTY.

JAMES B. ANGELL, LL. D.,

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HENRY WADE ROGERS, A. M.,

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HENRY B. BROWN, LL. D.,

Lecturer on Admiralty Law.

MELVILLE M. BIGELOW, PH. D.,

Lecturer on Equity.

WILLIAM G. HAMMOND, LL. D.,

Lecturer on the History of Common Law.

BRADLEY M. THOMPSON, M. S., LL. B.,

Lecturer on Real Property.

EDWARD S. DUNSTER, A. M., M. D.,

Lecturer on Medical Jurisprudence.

VICTOR C. VAUGHAN, PH. D., M. D.,

Lecturer on Toxicology.

CHARLES H. STOWELL, M. D.,

Lecturer on Legal Microscopy.

THOMAS C. TRUEBLOOD, A. M.,

Teacher of Elocution.

STUDENTS.

SENIORS.

NAME.

RESIDENCE.

Charles Alling, A. B.,

Madison, Ind.

Hanover College.

Sumner Simpson Anderson,

Charleston, Ill.

NAME.	RESIDENCE.
John Allen Bagley,	<i>Montpelier, Idaho.</i>
William Weller Baylor,	<i>Hillsdale.</i>
Norman James Beane, Att'y,	<i>Port Huron.</i>
Henry Clay Beitler,	<i>Hagerstown, Md.</i>
Joseph Edward Bell, Att'y,	<i>Billingsville, Ind.</i>
John Lee Benedict, Ph. B.,	<i>Rantoul, Ill.</i>
De Pauw University.	
Franklin Bennett,	<i>Detroit.</i>
Harvey Lee Benschoter,	<i>Sebewa.</i>
Thomas Ashford Bogle, Att'y,	<i>Marion, Kan.</i>
Daniel Robert Burke,	<i>Ottawa, Ill.</i>
Thomas Glashan Campbell, A. B.,	<i>North Branch.</i>
Toronto University.	
Thomas Capek,	<i>Omaha, Neb.</i>
Fred Cavanagh,	<i>Oakville, Ont.</i>
Charles Upham Champion,	<i>Coldwater.</i>
Addison Braden Clark,	<i>Frankfort, Ind.</i>
Elmer Elsworth Clark,	<i>Hamilton, Mo.</i>
Russell Smith Clark,	<i>Mattoon, Ill.</i>
Robert Fremont Clever,	<i>Chartiers, Pa.</i>
Harrison Dygert Cole,	<i>Ann Arbor.</i>
James Thomas Cooley,	<i>York, N. Y.</i>
Allen Foster Cooper, Att'y,	<i>Flatwoods, Pa.</i>
William Francis Crockett,	<i>Baltimore, Md.</i>
Lodowick Fitch Crofoot,	<i>Pontiac.</i>
Daniel Devine Cunningham, Att'y,	<i>Hinsdale, N. H.</i>
Oliver M. Cunningham, Att'y,	<i>Lakeville, Ind.</i>
Charles Brookman Cushman, B. S.,	<i>Galesburg, Ill.</i>
Knox College.	
Peter John Danhof, Att'y,	<i>Grand Haven.</i>
Clyde C. Dawson, Att'y,	<i>Canon City, Col.</i>
David Barnes Day,	<i>Ravenna, O.</i>
David B. Decker, Att'y,	<i>Casco, Me.</i>
Louis Lincoln Dennett, A. B.,	<i>Stockton, Cal.</i>
University of the Pacific.	
Lee De Vries, Ph. B., Att'y,	<i>Woodbridge, Cal.</i>
San Joaquin Valley College.	
Marion De Vries, Ph. B.,	<i>Woodbridge, Cal.</i>
San Joaquin Valley College.	
William Pitt Dewey, Jr., Att'y,	<i>Yankton, Dak.</i>
John Duff, Jr.,	<i>Port Clinton, O.</i>
John Herbert Duffie,	<i>Port Huron.</i>
Edgar Goodridge Dyer,	<i>Ottawa, Ill.</i>
Melville Samuel Eaton,	<i>Bluffton, O.</i>
Clarendon Bennett Eyer,	<i>Highland Park, Ill.</i>

NAME.	RESIDENCE.
Alfred Stillman Frost,	<i>Fulton.</i>
William Simpson Frost,	<i>Ann Arbor.</i>
George Harvy Gable,	<i>Vail, Ia.</i>
Peter J. Galle,	<i>Mountridge, Kan.</i>
William Cornelius Gallagher, Att'y,	<i>Lansing.</i>
Robert Prather Gilbert,	<i>Winona, Dak.</i>
Perley Francis Gosbey, A. M., Att'y,	<i>San José, Cal.</i>
University of the Pacific.	
Franklin Israel Gosser,	<i>Leechburgh, Pa.</i>
Henry James Grannis, A. B.,	<i>Manistique.</i>
University of Minnesota.	
Austin Edwards Griffiths, Att'y,	<i>York, Neb.</i>
Tyler Leslie Hagerthy,	<i>Ellsworth, Me.</i>
Edmon Grant Hall, Att'y,	<i>Oxford, Ind.</i>
Theodore Daniel Halpin,	<i>Lapeer.</i>
Joseph Hawley,	<i>Pittsburgh, Pa.</i>
William De Zeng Heise,	<i>Joliet, Ill.</i>
John Maurice Herbert, A. B., Att'y,	<i>Murphysborough, Ill.</i>
College of Christian Brothers.	
Hardin Helm Herr, Att'y,	<i>Owensboro, Ky.</i>
Edward Charles Higgins, Att'y,	<i>Woodstock, Ill.</i>
Almeda Eliza Hitchcock,	<i>Hilo, Hawaiian Islands.</i>
Ralph Whidden Hobart, A. B., Att'y,	<i>Bangor, Me.</i>
Kings College.	
Michael Henry Hoey,	<i>Dexter.</i>
Joseph Lincoln Holmes,	<i>Seventy-Six, Pa.</i>
William August Hunneke, A. B.,	<i>Berea, O.</i>
German Wallace College.	
Charles Montgomery Irwin,	<i>Austin, Ill.</i>
Ernest Herndon Jackson,	<i>Paola, Kan.</i>
Harry Victor Jackson,	<i>Detroit.</i>
Alexander Johnson,	<i>Salt Lake City, Utah.</i>
Henry Zacharias Johnson, Att'y,	<i>Boise City, Idaho.</i>
William Leman Joyce,	<i>Paola, Kan.</i>
Edward Henry Kennedy,	<i>Ypsilanti.</i>
William Carroll Henry Keough,	<i>Kansas City, Mo.</i>
John Kirk,	<i>Ypsilanti.</i>
Elmer Kirkby, Att'y,	<i>Jackson.</i>
Frank Herbert Knapp, A. B., Att'y,	<i>Sackville, New Brunswick.</i>
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Ellery Elmer Kribbs,	<i>Edinburgh, Pa.</i>
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Anna Calista Clarke,	<i>Athens, Pa.,</i>	E. J. Beecher.
George W. Cook,	<i>Holt,</i>	J. F. Ohlinger.
Mary Ann Cooke,	<i>Norwalk, O.,</i>	Olive L. Eddy.
Roy Samuel Copeland,	<i>Dexter,</i>	E. F. Chase.
William A. Cotton,	<i>Grand Rapids,</i>	E. A. Gesler.
Guy Coulter,	<i>Columbus, O.,</i>	Faculty.
Eva Alice Cunningham,	<i>Crawfordsville, Ia.,</i>	Faculty.
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Edward Arthur Darby,	<i>Hastings, Neb.,</i>	A. R. Van Sickle.
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Denias Dawe,	<i>Deerfield,</i>	W. Wood.
Ella Kyes Dearborn,	<i>Saginaw,</i>	L. A. Melze.
Mary Denison,	<i>Toledo, O.,</i>	Faculty.
Walter Newton Fowler,	<i>Ann Arbor,</i>	Faculty.
Alex Randall Griffith,	<i>Grand Forks, Dak.,</i>	Faculty.
Charles Edwards Grove, A. B.,	<i>New Britain, Pa.,</i>	J. E. Groff.
Lizzie Amanda Hendershott,	<i>Irving,</i>	Faculty.
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Leslie Allen Howe,	<i>Jackson,</i>	J. F. Brown.
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Union College.		
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Kate Teressa Moore,	<i>Detroit,</i>	Ellen M. Keller.
Mary Anna Morley,	<i>Bay City,</i>	Faculty.
Andrew Bodwell Nelles,	<i>Ingersoll, Ont.,</i>	F. D. Canfield.

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Walter Longyor Slack,	<i>Fenton,</i>	L. E. Knapp.
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Jerome Bonaparte Wheelock,	<i>Minneapolis, Minn.,</i>	Faculty.
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University of Maryland.

RESIDENCE.

Baltimore, Md.

STUDENTS.

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Robert Burns Avery,
Horace Albert Benson,
Clarence Walker Berry,
William Townsend Binzley,
Harriette Parkes Brierley,
Harry Fielden Briggs,

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Tunkhannock, Pa.,
Woodford, O.,
Ann Arbor,
New Brighton, Pa.,
Stalybridge, Eng.,
Torquay, Eng.,

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Faculty.
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E. F. Avery.
H. F. Billmeyer.
Faculty.
Faculty.
J. S. Crapper.
Frank H. Briggs.

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Frank Howard Essig,	<i>Owosso,</i>	Faculty.
William Burton Flynn,	<i>Ann Arbor,</i>	Faculty.
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Sherman M. Fowler,	<i>Nashville,</i>	J. C. Andrus.
Jeronimo Jill Garcia, B. S.,	<i>Panama City, U. S of C.,</i>	L. C. Cells.
Ohio Normal University.		
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John Jarius Green,	<i>Portland,</i>	Faculty.
Bertrand Francois Hall,	<i>Flint,</i>	B. F. Miller.
Louis Phillips Hall,	<i>Ann Arbor,</i>	Faculty.
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William Carley Herbert,	<i>Detroit,</i>	Faculty.
George Arthur Holliday,	<i>Traverse City,</i>	E. L. Ashton.
Horace Nathaniel Holmes,	<i>Livermore, Cal.,</i>	Faculty.
William George Howley,	<i>Ann Arbor,</i>	Faculty.
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Robert Edward Jeanneret,	<i>Ligonier, Ind.,</i>	A. Gantz.
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Jacob William Jungman,	<i>Cleveland, O.,</i>	J. R. Bell.
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Reuben John Kirk,	<i>Genou, O.,</i>	Faculty.
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Otto Marx,	<i>Toledo, O.,</i>	Faculty.
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Charles Shuler McIndoe,	<i>Wausau, Wis.,</i>	B. H. Conlin.
Edwin Arthur McKinney, B.S.,	<i>Minneapolis, Minn.,</i>	G. W. Avery.
University of Minnesota.		
Charles Edward Meerhoff,	<i>Richmond, Ind.,</i>	W. N. Wilson.

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Almon Green Moffett,	<i>Cleveland, O.,</i>	I. E. Sampsell.
Richard Edward Moll,	<i>Blissfield,</i>	B. C. Moll.
Eli Louis Moore,	<i>Ann Arbor,</i>	Faculty.
Frank E. Morey,	<i>Hillsdale,</i>	J. C. Snyder.
Irvin Myers,	<i>Cassopolis,</i>	C. H. Funk.
Rudolph Paul Nagle,	<i>Milwaukee, Wis.,</i>	E. H. Wanko.
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Harry Cox Nickels,	<i>Ann Arbor,</i>	Faculty.
Charles Walter Nutting,	<i>Spring Valley, Minn.,</i>	J. E. Nutting.
Fred George Olp,	<i>Ann Arbor,</i>	A. B. Bell.
James Andrew Oswald,	<i>Ann Arbor,</i>	Faculty.
Edwin Tecumseh Papst,	<i>Lexington,</i>	J. W. Norman.
Homer Ellsworth Parshall,	<i>Pontiac,</i>	Faculty.
Arthur Mowry Potter,	<i>Orchard Lake,</i>	Faculty.
William Orlando Randall,	<i>Marysville,</i>	J. W. Norman.
Henry Charles Raymond,	<i>Newport, Eng.,</i>	George Beavis.
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Arthur Richardson,	<i>Ann Arbor,</i>	Faculty.
Henry William Riser,	<i>Lansing, Ia.,</i>	Faculty.
Martha Josephine Robinson,	<i>Cleveland, O.,</i>	J. E. Robinson.
Fred Clarence Sawyer,	<i>Ann Arbor,</i>	Faculty.
Sumner Oliver Sawyer,	<i>Kent, O.,</i>	J. C. Waldron.
Charles B. Scudder,	<i>Randolph, N. Y.,</i>	Faculty.
Henry Martin Seybold,	<i>Ann Arbor,</i>	Faculty.
Michael Cornelius Sheehan,	<i>Ann Arbor,</i>	Faculty.
David Herman Shelton,	<i>Hamlin, Kan.,</i>	Faculty.
Alice Lovyse Sherman,	<i>Lake Geneva, Wis.,</i>	Faculty.
Adelbert Westel Showerman,	<i>Waukesha, Wis.,</i>	Faculty.
Cyrus Uz Smith,	<i>Ottawa, Kan.,</i>	Faculty.
Lucius Chipman Smith,	<i>Ann Arbor,</i>	Frank Seger.
De Witt Spalsbury,	<i>Leonidas,</i>	E. F. Saunders.
Sherman M. Stauffer,	<i>Bloomington, Ill.,</i>	G. D. Sitherwood.
Carroll Wesley Staples,	<i>Lyndon, Vt.,</i>	H. G. Staples.
Charles Perce Stone,	<i>Ann Arbor,</i>	Faculty.
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Robert William Sweetnam,	<i>Manistee,</i>	J. L. Sweetnam.
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Victor Emmanuel Tuttle,	<i>Ann Arbor,</i>	Faculty.
Howard Devon Van Antwerp,	<i>Mt. Sterling, Ky.,</i>	W. Van Antwerp.
Martin Dogener Van den Berg,	<i>Grand Rapids,</i>	A. Rysdorp.
Miguel Angel Velazquez,	<i>San José, Costa Rica,</i>	Faculty.

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Alfred Frederick Webster,	<i>Toronto, Ont.,</i>	Faculty.
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John Williams,	<i>Fostoria, O.,</i>	A. S. Williams.
William Holt Woodburn,	<i>Glasgow, Scotland,</i>	W. S. Woodburn.
Paul Woolsey,	<i>Battle Creek,</i>	Faculty.
Walter Thomas Wright,	<i>Ann Arbor,</i>	Faculty.



ADDENDUM.

The following should be added to the list of senior students in the Department of Law :

NAME.	RESIDENCE.
Daniel William Reardon,	<i>Ludington.</i>

SUMMARY OF STUDENTS.

Department of Literature, Science, and the Arts.

RESIDENT GRADUATES	23
GRADUATES STUDYING <i>in absentia</i>	36
CANDIDATES FOR A DEGREE	563
STUDENTS NOT CANDIDATES FOR A DEGREE	126 — 748

Department of Medicine and Surgery.

RESIDENT GRADUATES	2
THIRD YEAR STUDENTS	63
SECOND YEAR STUDENTS	108
FIRST YEAR STUDENTS	137 — 310

Department of Law.

SENIORS	154
JUNIORS	181
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School of Pharmacy.

RESIDENT GRADUATE	1
SECOND YEAR STUDENTS	26
FIRST YEAR STUDENTS	63 — 90

Homœopathic Medical College.

STUDENTS—Total in the College	74
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College of Dental Surgery.

STUDENTS—Total in the College	104
	<hr/> 1667

SUMMARY BY STATES

AND BY DEPARTMENTS.

STATE OR COUNTRY.	Department of Literature, Science, and the Arts.	Department of Medicine and Surgery.	Department of Law.	School of Pharmacy.	Homoeopathic Medical College.	College of Dental Surgery.	Total.
Michigan.....	422	143	94	52	41	49	801
Illinois.....	98	15	39	3	1	2	158
Ohio.....	55	18	28	12	6	13	132
Indiana.....	40	18	23	5	—	4	86
New York.....	29	29	8	4	4	4	78
Pennsylvania.....	11	15	15	—	2	2	45
Iowa.....	14	8	16	2	2	—	44
Minnesota.....	13	5	13	—	3	2	38
Kansas.....	6	6	10	3	—	4	29
Missouri.....	7	4	10	2	—	—	23
California.....	3	—	13	1	—	1	18
Wisconsin.....	4	3	3	—	1	6	17
Kentucky.....	4	2	8	1	—	1	16
Nebraska.....	2	1	9	—	1	—	13
Colorado.....	3	1	7	—	—	—	11
Dakota.....	1	3	3	—	1	—	8
Massachusetts.....	4	3	—	—	—	1	8
Maine.....	3	—	4	—	—	—	7
Utah.....	6	—	1	—	—	—	7
Arkansas.....	5	—	1	—	—	—	6
Maryland.....	—	2	2	—	—	1	5
Oregon.....	1	1	2	—	1	—	5
Washington Territory.....	2	1	2	—	—	—	5
Idaho.....	—	—	4	—	—	—	4
Rhode Island.....	—	1	3	—	—	—	4
Vermont.....	—	2	1	—	—	1	4
Montana.....	1	1	1	—	—	—	3
New Hampshire.....	—	1	2	—	—	—	3
Tennessee.....	—	—	2	1	—	—	3
Connecticut.....	1	1	—	—	—	—	2
Delaware.....	—	—	—	—	2	—	2
New Jersey.....	1	—	—	1	—	—	2
Texas.....	1	—	1	—	—	—	2
Alabama.....	—	1	—	—	—	—	1
District of Columbia.....	1	—	—	—	—	—	1
Florida.....	1	—	—	—	—	—	1
Georgia.....	1	—	—	—	—	—	1
Nevada.....	—	—	1	—	—	—	1
Virginia.....	—	—	1	—	—	—	1
West Virginia.....	—	1	—	—	—	—	1
Ontario.....	1	21	3	1	9	1	36
Japan.....	4	1	6	—	—	—	11
England.....	—	1	—	—	—	6	7
New Brunswick.....	—	3	1	—	—	—	4
Nova Scotia.....	—	1	2	—	—	—	3
Hawaiian Islands.....	—	—	2	—	—	—	2
Italy.....	1	—	—	—	—	1	2
Turkey.....	—	2	—	—	—	—	2
Costa Rica.....	—	—	—	—	—	1	1
Province of Quebec.....	1	—	—	—	—	—	1
Russia.....	1	—	—	—	—	—	1
Scotland.....	—	—	—	—	—	1	1
United States of Columbia.....	—	—	—	—	—	1	1
Total.....	748	310	341	90	74	104	1,667

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CALENDAR

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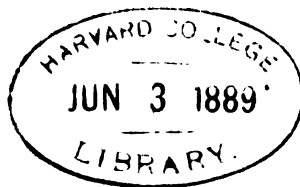
UNIVERSITY OF MICHIGAN

— FOR —

1888-89.



ANN ARBOR, MICH.:
PUBLISHED BY THE UNIVERSITY.
1889.



By mail

THE COURIER PRINTING HOUSE, ANN ARBOR, MICH.

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ANNOUNCEMENTS FOR 1889-90.

1889.

January	8.	University Exercises resumed after Holiday Vacation.
February	15.	(Evening.) FIRST SEMESTER CLOSES.
February	18.	SECOND SEMESTER BEGINS.
April	12.	(Evening.) Recess begins, ending April 22, (evening).
June	14, 15.	<i>Examination for Admission to the School of Pharmacy.</i>
June	22, 24.	<i>Examination for Admission to the Department of Literature, Science, and the Arts.</i>
June	23.	<i>Baccalaureate Address.</i>
June	25.	<i>Class Day.</i>
June	26.	<i>Alumni Day.</i>
June	27.	COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY. Summer Vacation begins.
September 25-30.		<i>Examination for Admission to the Department of Literature, Science, and the Arts.</i>
September 26, 27.		<i>Examination for Admission to the Department of Law.</i>
September 27, 28.		<i>Examination for Admission to the School of Pharmacy.</i>
September 28, 30.		<i>Examination for Admission to the Homœopathic Medical College.</i>
September 30.		<i>Examination for Admission to the Department of Medicine and Surgery, and to the College of Dental Surgery.</i>
October	1.	FIRST SEMESTER BEGINS IN ALL DEPARTMENTS OF THE UNIVERSITY.
November	—.	Thanksgiving Recess of three days, beginning Tuesday evening, in all Departments of the University.
December	20.	(Evening.) Holiday Vacation begins in all Departments.

1890.

January	7.	Exercises resumed.
February	14.	(Evening.) FIRST SEMESTER CLOSES.
February	17.	SECOND SEMESTER BEGINS.
April	11.	(Evening.) Recess begins, ending April 21, (evening).
June	26.	COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY.

1889.														1890.													
JANUARY.							JULY.							JANUARY.													
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FEBRUARY.							AUGUST.							FEBRUARY.													
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12	13	14	15	16	17	18	10	11	12	13	14	15	16	11	12	13	14	15	16	17							
19	20	21	22	23	24	25	17	18	19	20	21	22	23	18	19	20	21	22	23	24							
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JUNE.							DECEMBER.							JUNE.													
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BOARD OF REGENTS.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

TERM EXPIRES.

HON. AUSTIN BLAIR,	<i>Jackson,</i>	Dec. 31, 1889.
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HON. ARTHUR M. CLARK,	<i>Lexington,</i>	" 1891.
HON. CHARLES J. WILLETT,	<i>St. Louis,</i>	" 1891.
HON. HERMANN KIEFER,†	<i>Detroit,</i>	" 1893.
HON. CHARLES R. WHITMAN,	<i>Ann Arbor,</i>	" 1893.
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HON. CHARLES HEBARD,	<i>Pequaming,</i>	" 1895.

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HON. HERMON C. BUMPUS, Ph. B.	<i>Olivet.</i>

* In place of Hon. James F. Joy, resigned. † Appointed in March, 1889, in place of Hon. Moses W. Field, deceased.

MEMBERS OF THE FACULTIES,

AND OTHER OFFICERS.

PERMANENT APPOINTMENTS.*

- JAMES B. ANGELL, LL. D., PRESIDENT. South University Avenue.
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- GEORGE E. FROTHINGHAM, M. D., *Professor of Materia Medica, Ophthalmic and Aural Surgery, and Clinical Ophthalmology.* 50 East Washington Street.
- DONALD MACLEAN, A. M., M. D., *Professor of Surgery and Clinical Surgery.* 72 Lafayette Avenue, Detroit.
- WILLIAM H. PETTEE, A. M., *Professor of Mineralogy, Economic Geology, and Mining Engineering.* 52 Thompson Street.
- JONATHAN TAFT, M. D., D. D. S., *Professor of the Principles and Practice of Operative Dentistry, and Dean of the College of Dental Surgery.* 20 South University Avenue.
- JOHN A. WATLING, D. D. S., *Professor of Clinical and Mechanical Dentistry.* Huron Street, Ypsilanti.

* The names of Professors (including Librarian), Assistant Professors, and other officers are placed in their appropriate divisions, according to length of continuous service with present rank.

- * JOHN W. LANGLEY, S. B., M. D., *Professor of General Chemistry and Metallurgy.* 74 Washtenaw Avenue.
- MARK W. HARRINGTON, A. M., *Professor of Astronomy, and Director of the Observatory.* Observatory.
- JOSEPH B. STEERE, PH. D., *Professor of Zoology.* South Ypsilanti Road.
- EDWARD L. WALTER, PH. D., *Professor of Romance Languages and Literatures.* 93 South State Street.
- ALEXANDER WINCHELL, LL. D., *Professor of Geology and Palæontology.* 11 North University Avenue.
- ISAAC N. DEMMON, A. M., *Professor of English and Rhetoric.* 76 Washtenaw Avenue.
- GEORGE S. MORRIS, PH. D., *Professor of Philosophy.* 60 South State Street.
- WILLIAM H. DORRANCE, D. D. S., *Professor of Prosthetic Dentistry and Dental Metallurgy.* 42 South Ingalls Street.
- ALBERT H. PATTENGILL, A. M., *Associate Professor of Greek.* 37 East Catherine Street.
- MORTIMER E. COOLEY, M. E., *Professor of Mechanical Engineering.* 32 Packard Street.
- * HENRY SEWALL, PH. D., M. D., *Professor of Physiology.*
- WILLIAM J. HERDMAN, PH. B., M. D., *Professor of Practical Anatomy and Diseases of the Nervous System, and Demonstrator of Anatomy.* 48 East Huron Street.
- WOOSTER W. BEMAN, A. M., *Professor of Mathematics.* 19 South Fifth Street.
- HENRY WADE ROGERS, A. M., *Tappan Professor of Law, Professor of Roman Law, and Dean of the Department of Law.* 82 South State Street.
- VICTOR C. VAUGHAN, PH. D., M. D., *Professor of Hygiene and Physiological Chemistry, and Director of the Hygienic Laboratory.* 15 South State Street.
- CHARLES H. STOWELL, M. D., *Professor of Histology and Microscopy.* 79 South State Street.
- HENRY L. OBETZ, M. D., *Professor of Surgery and Clinical Surgery, and Dean of the Homœopathic Medical College.* 102 Lafayette Avenue, Detroit.

* Absent on leave.

- * THOMAS M. COOLEY, LL.D., *Professor of American History and Constitutional Law.* 76 South State Street.
- CHARLES S. DENISON, M. S., C. E., *Professor of Descriptive Geometry, Stereotomy, and Drawing.* 6 North Division Street.
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- JAMES C. WOOD, M. D., *Professor of Obstetrics and Diseases of Women and Children in the Homœopathic Medical College.* 66 South Fourth Street.
- DANIEL A. McLACHLAN, M. D., *Professor of Theory and Practice of Medicine in the Homœopathic Medical College.* 26 South Division Street.
- HENRY S. CARHART, A. M., *Professor of Physics.* 7 Monroe Street.
- LEVI T. GRIFFIN, A. M., *Fletcher Professor of Law.* 374 Cass Avenue, Detroit.
- RAYMOND C. DAVIS, A. M., *Librarian.* 61 Washtenaw Avenue.
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- BURKE A. HINSDALE, PH. D., *Professor of the Science and the Art of Teaching.* 54 South University Avenue.
- HENRY F. LYSTER, A. M., M. D., *Professor of the Theory and Practice of Medicine and Clinical Medicine.* 397 Jefferson Avenue, Detroit.
- RICHARD HUDSON, A. M., *Professor of History.* 40 South Ingalls Street.

* Absent on leave.

- BRADLEY M. THOMPSON, M. S., LL. B., *Jay Professor of Law.* 25 East University Avenue.
- ALBERT A. STANLEY, *Professor of Music.* 19 South Ingalls Street.
- JOSEPH B. DAVIS, C. E., *Assistant Professor of Civil Engineering.* 51 South Ingalls Street.
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- JEROME C. KNOWLTON, A. B., *Assistant Professor of Law.* 77 East Huron Street.
- CHARLES M. GAYLEY, A. B., *Assistant Professor of English and Rhetoric.* 56 South University Avenue.
- NEVILLE S. HOFF, D. D. S., *Assistant Professor of Practical Dentistry.* 2 Forest Avenue.
- ANDREW C. McLAUGHLIN, A. B., *Assistant Professor of History.* 56 South University Avenue.
- P. R. DE PONT, A. B., B. S., *Assistant Professor of French, and Registrar of the Department of Literature, Science, and the Arts.* 23 Jefferson Street.
- LOUISA REED STOWELL, M. S., *Assistant in Microscopical Botany.* 79 South State Street.
- ALVISO B. STEVENS, PH. C., *Instructor in Pharmacy.* 15 Church Street.
- CLARENCE G. TAYLOR, B. S., *Superintendent of Shops in Engineering Laboratory.* 20 South University Avenue.
- JAMES N. MARTIN, PH. M., M. D., *Lecturer on Oral Pathology and Surgery in the College of Dental Surgery.* 49 Liberty Street.
- CHARLES K. MCGEE, A. B., *Assistant in General Chemistry.* 33 South Thayer Street.
- WILLIAM A. CAMPBELL, M. D., *Secretary of the Faculty of the Department of Medicine and Surgery, and Assistant to the Professor of Anatomy and Physiology.* 21 South State Street.
- JOSEPH H. VANCE, LL. B., *Assistant Librarian, in charge of the Law Library.* Ann Arbor Town.
- GOTTHELF C. HUBER, M. D., *Assistant Demonstrator of Anatomy.* 48 West Huron Street.
- NON-RESIDENT LECTURERS ON SPECIAL TOPICS.
- HENRY B. BROWN, LL. D., *Lecturer on Admiralty Law, for 1888-89.* 712 Jefferson Avenue, Detroit.

MELVILLE M. BIGELOW, PH. D., *Lecturer on Insurance,*
for 1888-89. Cambridge, Mass.

WILLIAM G. HAMMOND, LL. D., *Lecturer on the History*
of Common Law, for 1889-90. St. Louis, Mo.

JOSEPH W. WARREN, A. B., M. D., *Lecturer on Physiol-*
ogy, for 1888-89. Boston, Mass.

APPOINTMENTS FOR 1888-89.

JAMES N. MARTIN, PH. M., M. D., *Acting Professor of Ob-*
stetrics and Diseases of Women and Children in the
Department of Medicine and Surgery. 49 Liberty Street.

WALTER MILLER, A. M., *Acting Assistant Professor of*
Latin. 43 South Ingalls Street.

BARCLAY T. TRUEBLOOD, PH. D., M. D., *Lecturer on*
Medical Chemistry. 31½ South Twelfth Street.

LUCIUS L. VAN SLYKE, PH. D., *Lecturer on General Chem-*
istry. 4 Church Street.

JACOB E. REIGHARD, PH. B., *Instructor in Zoology.*
30 South Ingalls Street.

THOMAS C. TRUEBLOOD, A. M., *Instructor in Elocution.*
Corner of Hill Street and East University Avenue.

STEDMAN WILLARD CLARY, A. M., *Instructor in German.*
28 Packard Street.

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Physiological Chemistry. 9 Lawrence Street.

CONRAD GEORG, M. D., *Instructor in Materia Medica.* 87 Main Street.

WILLISTON S. HOUGH, PH. M., *Instructor in Philosophy.*
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ALEXANDER F. LANGE, A. M., *Instructor in English.*
23 North University Avenue.

WILLIAM W. CAMPBELL, B. S., *Instructor in Astronomy.*
28 Packard Street.

ALEXANDER ZIWET, C. E., *Instructor in Mathematics.*
60 East Washington Street.

CHARLES PURYEAR, A. M., C. E., *Instructor in Mathe-*
matics. 33 Ann Street.

THOMAS McCABE, PH. D., *Instructor in French.* 85 South State Street.

GEORGE W. WHYTE, B. S., *Lecturer on Metallurgy.*
25 North State Street.

- DAVID H. BROWNE, PH. B., *Instructor in Quantitative Analysis.* 56 South University Avenue.
- ELMER SANFORD, B. S., *Instructor in Physiology.* 16 South University Avenue.
- JOSEPH H. DRAKE, A. B., *Instructor in Latin.* 23 North University Avenue.
- FRANK N. COLE, PH. D., *Instructor in Mathematics.* 29 North University Avenue.
- LEWIS A. RHOADES, A. M., *Instructor in German.* 44 East Liberty Street.
- FRED NEWTON SCOTT, A. M., *Assistant Librarian.* 25 East University Avenue.
- JOHN S. CAMPBELL, M. D., *Assistant to the Professor of Materia Medica and Therapeutics in the Homœopathic Medical College, and Resident Physician in the Homœopathic Hospital.* Homœopathic Hospital.
- GEORGE W. LACEA, B. L., M. D., *Resident Physician and Surgeon in the University Hospital.* University Hospital.
- WILLIAM F. EDWARDS, *Accountant and Dispensing Clerk in the Chemical Laboratory.* 51 South Thayer Street.
- ERVIN E. EWELL, PH. C., *Assistant in Qualitative Analysis.* 22 South Fifth Street.
- MARY M. CUTLER, M. D., *Wardmistress in the University Hospital.* University Hospital.
- JOSEPH E. PUTNAM, *Assistant in Physics.* 47 Packard Street.
- GUSTAVE A. DEUCHER, M. D., *Assistant in Physiology.* 11 West Second Street.
- CHARLES P. BECKWITH, B. S., *Assistant in Qualitative Chemistry.* 18 Church Street.
- JULIUS O. SCHLOTTERBECK, PH. C., *Assistant in Pharmacognosy and Pharmacy.* 30 East Liberty Street.
- JOHN F. ABBOTT, M. D., *Assistant to the Professor of Surgery and Clinical Surgery in the Department of Medicine and Surgery.* 45 East Huron Street.
- JOHN D. RIKER, B. S., *Assistant in Physiological Chemistry.* 7 Thompson Street.
- GEORGE H. CHAFFEE, M. D., *Assistant to the Professor of Theory and Practice of Medicine in the Department of Medicine and Surgery.* 32 Jefferson Street.

- GEORGE H. CONKLIN, M. D., *Assistant to the Professor of Histology and Microscopy.* 74 East Huron Street.
- DAVID M. LICHTY, B. S., *Assistant in Qualitative Chemistry.* 22 East Madison Street.
- JOSEPH CLARK, *Steward of the Hospitals.* University Hospital.
- JAMES G. LYNDSEY, M. D., *Assistant to the Acting Professor of Obstetrics and Diseases of Women and Children in the Department of Medicine and Surgery.* 20 Maynard Street.
- BERT B. ROWE, M. D., *Wardmaster in the University Hospital.* University Hospital.
- BERTHA VAN HOUSEN, A. B., M. D., *Assistant Demonstrator of Anatomy.* 30 South Ingalls Street.
- FREDERICK C. HICKS, A. M., *Assistant in Political Economy.* 6 Monroe Street.
- MARY E. THOMPSON, A. B., M. D., *Assistant to the Professor of Obstetrics and Diseases of Women and Children, and to the Professor of Ophthalmology and Otology in the Homœopathic Medical College.* 27 Jefferson Street.
- DUNCAN J. SINCLAIR, M. D., *Assistant to the Professor of Surgery and Clinical Surgery, and to the Professor of Theory and Practice of Medicine in the Homœopathic Medical College.* Homœopathic Hospital.

UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

The University of Michigan is a part of the public educational system of the State. The governing body of the institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the constitution of the State. In accordance with the law of the State, the University aims to complete and crown the work that is begun in the public schools, by furnishing ample facilities for liberal education in literature, science, and the arts, and for thorough professional study of medicine, pharmacy, law, and dentistry. Through the aid that has been received from the United States and from the State it is enabled to offer its privileges, without charge for tuition, to all persons, of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the institution to all students, wherever their homes. It is in this broad, generous, and hospitable spirit, that the University has been founded, and that it endeavors to do its work.

The University comprises the Department of Literature, Science, and the Arts, the Department of Medicine and Surgery, the Department of Law, the School of Pharmacy, the Homœopathic Medical College, and the College of Dental Surgery. Each department has its special faculty of instruction. The University Senate is composed of all the faculties, and considers questions of common interest and importance to them all.

In the Department of Literature, Science, and the Arts, different lines of study lead to the attainment of the degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science,

Bachelor of Letters, the corresponding Masters' degrees, the degrees of Doctor of Philosophy, Doctor of Science, and Doctor of Letters, and the degrees of Civil Engineer, Mechanical Engineer, and Mining Engineer. When the same degree is given for different lines of study, this fact is indicated in the diploma. Students that do not wish to become candidates for a degree, may, if they are prepared to enter the University, pursue selected studies for such a time, not less than one semester, as they may choose.

In the professional schools the instruction is given largely by lectures. Degrees are given to graduates as follows: In the Department of Medicine and Surgery, the degree of Doctor of Medicine; in the Department of Law, the degree of Bachelor of Laws; in the School of Pharmacy, the degrees of Pharmaceutical Chemist and Master of Pharmacy; in the Homœopathic Medical College, the degree of Doctor of Medicine; in the College of Dental Surgery, the degree of Doctor of Dental Surgery.

Students in any department of the University may enter the classes in any other, upon obtaining permission from the faculties of the respective departments.

THE LIBRARIES.

The libraries of the University are the General Library, the Medical Library, the Law Library, and the Library of the College of Dental Surgery. They contain in the aggregate 67,759 volumes, 13,892 unbound pamphlets, and 264 charts.

The GENERAL LIBRARY contained Sept. 30, 1888, including the special collections known as the Parsons Library, the Mc-Millan Shakespeare Library, the Hagerman Collection of History and Political Science, the German-American Goethe Library, and the Dorsch Library, 53,837 volumes, 12,776 unbound pamphlets, and 264 charts.

The Parsons Library was collected by Professor C. H. Rau, of Heidelberg University. At his death it was offered for sale, and was bought and presented to the University in 1871 by the Hon. Philo Parsons, of Detroit. It contains with recent additions made by Mr. Parsons, 4,325 volumes and 5,000 pamphlets. It is especially rich in European works on the science of government, statistics, and political economy.

The nucleus of the McMillan Shakespeare Library was the valuable Shakespearian collection of 750 volumes made by Col. E. H. Thompson, of Flint. This was bought and presented to the University in 1882, by Mr. James McMillan, of Detroit, who at the same time provided the means for making additions to it. The collection now consists of 3,150 volumes of text, criticism, and Shakespeariana.

The Hagerman Collection of History and Political Science was purchased with means provided in 1882 by Mr. James J. Hagerman, a graduate of this University, class of 1861. It is practically a collection of great serial publications, of which there may be named, for the purpose of illustration, the Calendar of State Papers of Great Britain, *Petitot's Collection Complète des Mémoires relatifs à l' Histoire de France*, and the *Preussische Jahrbuecher*. It contains at present 2,600 volumes.

The German-American Goethe Library has been founded and will be augmented from funds contributed for the purpose by a large number of persons in Michigan and other States. The donors are chiefly, though not exclusively, Germans. The number of volumes secured thus far is 775.

The Dorsch Library was the private collection of Dr. Edward Dorsch, of Monroe. In accordance with a wish expressed by him a few months before his death, it was, after that event, presented by Mrs. Dorsch to the University. It contains 1,676 volumes and 148 pamphlets. Among the volumes are many of great interest and value, and some that are rare.

The catalogue of the library is the usual card catalogue of authors and subjects.

One hundred and seventy American and European periodicals are taken.

Members of the faculties and other officers of the University may draw books from the library, subject to certain restrictions. To all other persons it is a reference library. The reading room for general use will seat 210 readers. Separate rooms for advanced students are provided where work is pursued with the necessary books at hand.

The MEDICAL LIBRARY, containing 3,707 volumes and 913 unbound pamphlets, is shelved with the General Library, and is consulted under the same regulations. Fifty-five medical journals are regularly received.

The LAW LIBRARY occupies the large room on the first floor of the law building. In 1885 it was doubled in extent by the generosity of Mr. Christian H. Buhl, of Detroit, who presented to the University a large collection of law books. This library now contains 9,783 volumes.

The LIBRARY OF THE COLLEGE OF DENTAL SURGERY is shelved in a room in the dental building. It contains several sets of

valuable periodicals and many of the most important treatises on dentistry. The whole number of volumes is 432. Thirteen dental periodicals are taken.

The two literary societies in the Department of Literature, Science, and the Arts, have also good libraries.

The Students' Christian Association connected with the University has a well selected library of moral and religious works.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is known as the Detroit Observatory, having been founded through the liberality of citizens of Detroit. Valuable additions and improvements have been made by means of further contributions from the same source, and from the city of Ann Arbor, and also by appropriations made by the Board of Regents. The building consists of a main part, with a movable dome, and two wings. The east wing contains the large meridian circle presented by Mr. Henry N. Walker, of Detroit. It was constructed by Pistor & Martins, of Berlin, and is one of the largest and best of the kind. The same wing contains a sidereal clock, made by Tiede, of Berlin, and the collimators for the meridian circle. The west wing contains the observatory library and the smaller instruments, and connects with the residence of the Director. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late Henry Fitz, of New York.

A small observatory used in the work of instruction has been erected on the observatory grounds, near the main building. It contains an equatorial telescope of six inches aperture, and a transit instrument of three inches aperture, with zenith telescope attachment. A separate building contains computing rooms and rooms for observers, and a work-shop where necessary repairs and attachments for the instruments can be made.

A set of self-registering meteorological instruments, consisting of Hough's barograph and thermograph, and an anemograph, is a part of the outfit.

THE MUSEUMS.

The University Museums contain collections illustrative of natural history, the industrial arts, archæology, ethnology, the fine arts, history, anatomy, and materia medica. These collections are constantly increasing and are in charge of curators, as follows: the museum of fine arts and history, Professor Frieze; the collections in zoology, archæology, and ethnology, Professor Steere; the mineralogical collection, Professor Pettee; the geological collection, Professor Winchell; the botanical collection, Professor Spalding; the museum of applied chemistry, Professor Prescott; the museum of the department of medicine and surgery, Dr. W. A. Campbell; the museum of the homœopathic medical college, Dr. Obetz; the dental museum, Dr. Dorrance.

The collections are arranged in such a way as to render them accessible both to students and to visitors. The University affords a secure depository for objects of value and curiosity, and it is therefore hoped that frequent gifts will be made to its several museums.

The museum building contains the collections in mineralogy, geology, zoology, the industrial arts, archæology, and ethnology. The collections of works of art, including historical medallions and coins, are in the art gallery.

The following description will indicate the character of the several collections belonging to the University:

NATURAL HISTORY.

I. The MINERALOGICAL COLLECTION comprises about 6,000 specimens. It embraces about 2,500 specimens (principally European) purchased of the late Baron LEDERER, and known as the LEDERER COLLECTION; and, besides others, a rich collection of the MINERAL SPECIES OF MICHIGAN, including all varieties of copper ore and associated minerals from the different localities of the Lake Superior mining district.

II. The GEOLOGICAL COLLECTION consists of:

1. The large and complete series of lithological and palæontological specimens brought together by the State geological surveys, of which over a hundred fossil species have already become the types of original descriptions.

2. The WHITE COLLECTION, consisting of 1,018 distinct entries, 6,000 specimens.

3. The ROMINGER COLLECTION, embracing about 2,500 entries, 6,000 specimens, mostly from the mesozoic formations of central Europe. This collection embraces about 500 specimens of mesozoic ammonites.

4. SMITHSONIAN DEPOSITS, consisting, for the present, of a collection of specimens of foreign and domestic building stones, and twenty-three specimens of fossils from the Upper Missouri.

5. MISCELLANEOUS DONATIONS, COLLECTIONS, AND PURCHASES, including a series illustrative of the metalliferous regions of the Upper Peninsula, collected by Professor Winchell, and an interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, presented by the late General Custer, U. S. A.

6. The ROMINGER DEPOSIT, which has more than doubled the value of the geological illustrations available for study and investigation. It embraces (1) the types of all Dr. Rominger's original descriptions of paleozoic corals as contained in the Geological Report of Michigan, volume iii.—not alone the specimens figured, but numerous specimens of each species, which are not duplicates, but illustrations of different characters and varieties; (2) an enormous collection of *Stromatoporoids*—probably the largest and finest in the world; (3) a similar collection of *Bryozoa*; (4) paleozoic fossils belonging to all the other classes; (5) European fossils of all classes and ages in large number—the sponges forming, with the American species, a collection of extraordinary interest. All these specimens exist in a state of beautiful and very unusual perfection. It is impossible at present to form numerical estimates on the magnitude of the collection, but a special statement will be made out as early as practicable.

The entire geological cabinet is estimated to contain, aside from the Rominger deposit, about 14,000 distinct entries, 41,000 specimens.

III. The ZOOLOGICAL COLLECTIONS are very large, comprising about 110,000 specimens under about 23,250 entries. There is a full series illustrative of the fauna of Michigan and other northern and western States. The animals of the Pacific coast are well represented in the collection made by Lieutenant Trowbridge, and large additions from foreign countries have been made through the medium of the Smithsonian Institution. Large additions will be made on the arrival of the specimens collected in the Philippine Islands, by Professor Steere, in the years 1887 and 1888.

The BEAL-STEERE ZOOLOGICAL COLLECTION, made by Professor Steere in the years 1870-76, comprises about 25,000 insects, 1,500 shells, 8,000 birds, and numerous representatives of other groups; total, about 10,000 entries, 60,000 specimens.

IV. The BOTANICAL COLLECTION contains, in addition to Michigan plants collected by the public surveys, several valuable herbaria and sets of plants that have been presented to the University from time to time. Among these, some of the most important are the HOUGHTON HERBARIUM, the SAGER HERBARIUM, the AMES HERBARIUM, the HARRINGTON COLLECTION,

the BEAL-STEERE BOTANICAL COLLECTION, the ADAMS-JEWETT COLLECTION, and the GARRIGUES COLLECTION, all of which have been described in Calendars of previous years.

Among the more recent acquisitions are a set of native woods of the United States, collected and presented to the University by Professor C. S. Sargent, Director of the Arnold Arboretum of Harvard University; a set of 1,700 species of North American fungi, presented by Mr. Joseph B. Whittier, of East Saginaw; and a set of specimens illustrating the flora of the Lake Superior region, presented by Mr. Frank A. Wood.

The whole botanical cabinet contains about 70,000 specimens, representing 10,000 species, under 20,000 entries.

The collections in natural history are estimated to contain about 255,000 specimens, under 60,000 entries.

INDUSTRIAL COLLECTIONS.

The collections illustrative of the materials, processes, and products of the industrial arts and of agriculture have recently received a large and valuable addition. In 1885 the Chinese Government presented to the University the exhibit which it sent to the New Orleans Exposition. The whole collection, numbering several thousand specimens, is now on exhibition in a room set apart for its reception in the museum building. It illustrates with special fulness the varieties of Chinese cotton and the Chinese processes of manufacturing cotton and the finished products of cotton and also of silk. There are many articles showing the skill of the Chinese in working in wood, in ivory, in embroidery, in porcelain, and in painting on glass and on silk.

The nucleus of an industrial museum has long existed in the botanical and zoological cabinets, the cabinet of economic geology, the museum of applied chemistry, a collection of the seeds of cereals and other field and garden crops, and an interesting collection of textile fibres and various substitutes for cotton. The museum of applied chemistry represents the technology of industrial chemistry and of pharmacy. The chemical manufactures of the United States are chosen for illustration, with an especial prominence to production in Michigan. The University is desirous of enlarging these collections.

ARCHÆOLOGY AND ETHNOLOGY.

This department contains many articles of domestic and warlike use among the North American Indians and the Islanders of the South Pacific, numerous remains of the ancient Peruvians, and many specimens of clothing, art, etc., of the Amazonian Indians, modern Peruvians, Formosans, and natives of the East Indies and Alaska. The Chinese exhibit above referred to contains a large number of articles which belong to the ethnological collection.

THE FINE ARTS AND HISTORY.

The works of art belonging to the University are on exhibition in the galleries provided for them in the library building, and a printed catalogue has been prepared by Professor Frieze. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of the most valuable ancient statues and busts, such as the Apollo Belvedere, the Laocoon, the Sophocles, etc.; a gallery of more than two hundred reductions and models in terra cotta and other materials; the statues of Nydia and of Ruth Gleaning, by Randolph Rogers; copies of modern statues, busts, and reliefs; a gallery of engravings and photographic views, illustrating especially the architectural and sculptural remains of ancient Italy and Greece; a small collection of engraved copies of the great masterpieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, and the GOVERNOR BAGLEY COLLECTION—the former illustrative of ancient, mediæval, and modern European history, the latter designed to embrace all the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. A. E. Richards.

The late HENRY C. LEWIS, of Coldwater, Michigan, by his will bequeathed to the University his valuable collection of works of art, comprising about six hundred and fifty paintings and some forty pieces of statuary. The collection remains for the present at Coldwater, but will ultimately be transferred to the University gallery.

The ROGERS GALLERY, comprising the entire collection of the original casts of the works of Randolph Rogers, more than a hundred in number, has been given by that distinguished sculptor to the State of Michigan for the University museum. Nearly the whole of this collection has already been received and now forms a large and interesting part of the art gallery.

ANATOMY AND MATERIA MEDICA.

This museum is used more especially in connection with the instruction given in medicine, and a fuller description of it will be found in the chapter on the Department of Medicine and Surgery.

THE LABORATORIES.

In the several laboratories of the University opportunities are provided for practical instruction in physics, chemistry, geology, zoology, botany, physiology, histology, hygiene, engineering, and dentistry.

PHYSICAL LABORATORY.

The course of instruction in the physical laboratory is intended to

aid the student in acquiring skill in the use of physical apparatus, confidence in his ability to determine for himself well-known constants of nature, and that intimate knowledge of the principles of physics which can be obtained neither from text-books nor lectures.

Quite an extensive collection of apparatus is already provided for lecture experiments, for mechanical measurements, and for quantitative work in sound, light, and electricity. Many new electrical instruments have recently been received from the best European makers.

The building erected last year contains about 11,000 square feet of floor space, devoted exclusively to physics. The basement story of eleven feet, with floor two feet below grade, contains ten rooms, devoted chiefly to electrical work, with provision for the subjects of light and heat. In the first story are the lecture-room, the apparatus-room, the general physical laboratory, a mercury-room, a balance-room, and two private rooms. Stability is secured by specially strong floors, by slate tables resting on stone corbels built into the walls, and by independent piers. The building is supplied with gas, water, steam for heating and for power, and with appliances for the production, storage, and measurement of electricity on a commercial scale, with special reference to the needs of students in engineering. The courses in physics are open to all students in the Department of Literature, Science, and the Arts.

CHEMICAL LABORATORY.

In this laboratory, facilities are provided for systematic instruction in laboratory methods of chemical study, including general chemistry, analytical and applied chemistry, organic chemistry, physiological chemistry, pharmacy, metallurgy, and assaying, and favorable opportunities are offered for original research.

The laboratory building is so arranged as to provide room for twelve distinct branches of chemical work within the college year, in addition to the lecture-rooms, balance-rooms, instructors' rooms, and store-rooms. Two hundred and sixty-two students can be provided with tables for work at the same time. The laboratory is open to all students of the University, and is regularly used by all departments except the Department of Law. The laboratory is also open to any person who wishes to pursue special studies therein, provided he comply with the conditions for admission to that department of the University to which the desired special studies properly belong.

In all these courses of instruction there are recitations and lectures in the class-rooms, giving direction daily to the student at his table, and demanding constant study of the work undertaken. This method of teaching makes it indispensable that the student begin with a class. The laboratory is open to students each week day of the college year.

GEOLOGICAL, ZOOLOGICAL, AND BOTANICAL LABORATORIES.

Opportunity for practical work in geology, zoology, and botany is provided in rooms set apart for this use in the museum building, and in the north wing of the main building. The rooms are furnished with microscopes, photographic instruments, cutting and polishing lathes, and other apparatus for the preparation of specimens. Special encouragement and assistance are given to students wishing to carry on original investigations.

MICROSCOPICAL LABORATORY.

This laboratory is used principally by students of the Department of Literature, Science, and the Arts, and of the School of Pharmacy. There is room for the accommodation of forty students working at the same time. Forty compound microscopes, various pieces of other apparatus, such as section-cutters, turn-tables, and balances, two hundred typical specimens of crude drugs, a cabinet of over one thousand mounted sections, micro-chemical reagents, and the usual conveniences of gas and water, constitute a part of the outfit.

Practical instruction is given in the study of vegetable histology, in pharmacology, and in the detection with the microscope of adulterations of food and drugs. Each student is assigned a separate table and microscope, and is required to prepare his own sections, and to draw, measure, and describe the objects examined.

HISTOLOGICAL LABORATORY.

This laboratory is supplied with between twenty and thirty superior microscopes of American manufacture, besides two imported from Europe, and with complete apparatus for use in microscopical investigations. The laboratory is regularly used by students of all departments of the University except the Department of Law. Each student is given a course of fifteen lessons. An advanced course is also offered, including original investigations and the more complete study of normal and pathological histology. The student thus becomes familiar with the manipulation of microscopes, and studies the more important tissues of the body, and the methods employed in preparing and mounting specimens. During the last college year nearly three hundred students availed themselves of the opportunities for study here offered.

ENGINEERING LABORATORY.

The Engineering Laboratory has recently been enlarged by the addition of two wings, which nearly double its former capacity, and it now contains about 20,000 square feet of floor space.

The mechanical laboratory, 40 by 80 feet, is devoted to experimental work in connection with the testing of engines, boilers, pumps, injectors,

belting, toothed and friction gearing, and lubricants; and to such original work as can be undertaken with advantage. Original work bearing on subjects for theses is especially encouraged. Machines for testing building material will also be provided. The work also extends to the testing of engines, boilers, and water-wheels of neighboring mills and electric-light plants. The pumping engines at the city water works have been fitted up by the company with especial reference to the convenience of engineering students in making tests.

The iron room, or machine shop, and the wood room and pattern shop, each 40 by 80 feet, contain the tools and apparatus usually found in first-class establishments. The wood room contains benches for twenty students. The pattern loft, 40 by 80 feet, contains a fine collection of patterns made by students.

The forge shop, 30 by 40 feet, is fitted up with twelve forges, built by students in the laboratory shops. The blast is supplied by a No. 4 Sturtevant pressure blower, and the smoke is cleared away by a No. 31 exhaust fan.

The foundry, 30 by 40 feet, contains an eighteen-inch cupola and brass furnaces, and is supplied with blast by a No. 3 Sturtevant pressure blower.

The central wing is 32 by 54 feet. The first floor contains a large, well-ventilated wash-room with closets and other conveniences; an engine-room with a fifty-horse power Reynolds-Corliss engine; and superintendent's office. The second floor contains a large, well-lighted drawing-room, and a blue-print room. The basement and attic are devoted to storage purposes.

In the tower, at an elevation of seventy feet, there is a water tank, of one hundred barrels capacity, that can be utilized for experimental work in hydraulics.

New machinery is added to each shop from time to time so that engineering students and others desiring instruction and practice in the use of tools for working in wood and metal may be properly accommodated, and at the same time have opportunity to become familiar with the more common materials and forms of construction used in engineering structures, buildings, and machinery. In all shop-work an effort is made to follow the practice of the best shops. Several of the machines in use have been designed and built by the students themselves.

Mr. John M. Smoots, Mr. Robert Winslow, and Mr. Horace Purfield are employed as foremen in the machine shop, the foundry, and the wood room, and they also assist in the work of instruction.

PHYSIOLOGICAL LABORATORY.

The apartments which have recently been provided for this laboratory offer unsurpassed facilities for practical work in physiology, whether

of class instruction or original investigation. A large and well-lighted room is appropriated chiefly to the use of undergraduate students who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of the special senses, muscular contraction, nerve, reflex action, circulation, and respiration. A smaller room is devoted to advanced work and original investigation. Conveniently situated are an apparatus-room, a dark chamber for optical experiments, an incubation closet, and a large work shop containing machinists' and carpenters' appliances. The instrumental equipment of this laboratory is unusually complete.

HYGIENIC LABORATORY.

The building erected last year for the use of this laboratory, is now occupied. It contains a large room for general work in hygiene, a lecture-room, a microscopical room, separate rooms fitted especially for gas analysis, water analysis, and bacteriological work, a disinfecting chamber, a cold chamber, and three private rooms for original research. The laboratory is furnished with all necessary chemical, optical, and bacteriological apparatus. A full set of Koch's bacteriological apparatus is in use. The chief purpose of this laboratory is to furnish proper facilities to those who are competent to carry on original investigations in hygiene, and it is open to any such person, who desires to pursue special lines of investigation, provided he comply with the requirements for admission to the literary or the medical departments of the University.

DENTAL LABORATORY.

This laboratory has been fitted up especially for students in the College of Dental Surgery. It contains eight charcoal and coke furnaces; also, sand-tables, rolling-mills, and other appliances for the various manipulations of prosthetic dentistry, such as the construction of artificial dentures in gold, continuous gum, silver, aluminium, and other bases; appliances for the regulation of teeth, the mechanical treatment of oral deformities, and the construction of instruments. The laboratory has accommodations for fifty students at a time.

THE HOSPITALS.

During the past few years the facilities for clinical instruction in the two medical schools connected with the University have been largely increased. By the liberality of successive legislatures, aided by contributions from the city of Ann Arbor, ample hospital accommodations have been provided. The University Hospital is under the direction of the Faculty of the

Department of Medicine and Surgery; the Homœopathic Hospital is connected with the Homœopathic Medical College. Further information in regard to the hospitals is given in connection with the descriptions of the medical schools.

FEES AND EXPENSES.

MATRICULATION FEE.—Every student before entering any department of the University is required to pay a matriculation fee. This fee, which, for citizens of Michigan, is ten dollars, and, for those who come from any other State or country, twenty-five dollars, is paid but once, and entitles the student to the privileges of permanent membership in the University.

ANNUAL FEE.—In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses. This fee is paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fee as undergraduates. The annual fee in the several departments of the University is as follows:

Department of Literature, Science, and the Arts: for Michigan students, twenty dollars; for all others, thirty dollars.

Department of Medicine and Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Department of Law: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

School of Pharmacy: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Homœopathic Medical College: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

College of Dental Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

The matriculation fee and the annual fee must be paid at the beginning of the college year. A by-law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees that are due.

LABORATORY EXPENSES.—Students who pursue laboratory courses of study are required to pay for the materials and

apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from one dollar to twenty dollars. The laboratory expenses of students will vary with their prudence and economy. Experience has shown that in the chemical laboratory the average expense for all courses is about one dollar and twenty cents a week.

DIPLOMA FEE.—The fee for the diploma given on graduation is ten dollars, and the by-laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for diploma.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office. The annual expenses of students, including clothing and incidentals, are, on the average, about three hundred and seventy dollars. The University does not undertake to furnish manual labor to students; yet a few find opportunities in the city for remunerative labor.

RELATION OF STUDENTS TO THE CITY GOVERNMENT.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

AIDS TO MORAL AND RELIGIOUS CULTURE.

Religious exercises are held regularly in the University Chapel, at which attendance is voluntary.

The Students' Christian Association, which has a large membership, holds stated meetings, either for religious or social

improvement. Through the enterprising efforts of the Association and the benevolence of those interested in its aims, a spacious and beautiful building, called Newberry Hall, has been erected for its use adjacent to the University Campus.

The churches of the city of Ann Arbor are cordially thrown open to the students, whose interests are largely consulted by the pastors in their pulpit instruction and in their plans of work. There are churches of the following communions in the city: Baptist, Congregationalist, the Disciples, German Lutheran, German Methodist, Methodist Episcopal, Presbyterian, Protestant Episcopal, Roman Catholic, and Unitarian.

In several of the churches, guilds or other societies, consisting chiefly of students, have been organized, both for religious and moral culture, and for social entertainment. The Hobart Guild, connected with St. Andrews' Church (Protestant Episcopal), has already erected a commodious building, called Hobart Hall, planned and equipped for all the objects of the Guild; and one of the several lectureships contemplated in its plans has been endowed under the title of the Baldwin Lectures for the Establishment and Defence of Christian Truth. Two of the annual courses of Baldwin Lectures have already been given. The Presbyterian church, with similar aims, has established the Tappan Presbyterian Hall Association, with an annual course of lectures upon church history and church work. The Methodist Episcopal church has also organized the Wesleyan Guild, with its course of lectures, and has made the beginning of a permanent fund. The Unity Club and the Channing Guild are societies formed by the Unitarian church with similar purposes.

DEPARTMENT OF Literature, Science, and the Arts.

The Department of Literature, Science, and the Arts owes its name to a provision in the legislative act by which the University was organized in the year 1837. In general terms, this department represents the collegiate and technological sides of university work, as distinguished from the work of the professional schools in medicine, law, pharmacy, and dentistry. It also provides instruction in studies pertaining to political science, as heretofore, though, with the flexible elective system now in force, it has been found unnecessary to retain an independent School of Political Science, under the form of organization described in calendars of previous years.

The courses of instruction are arranged to meet the wants not only of such as are fitted to take up a systematic course of study in the classics, or in science, but also for those whose preparatory studies have not included any ancient or foreign language. Special students, who wish to pursue miscellaneous studies, are admitted on conditions stated on page 39.

The academic year extends from the first day of October to the Thursday following the last Wednesday in June.

In what follows, the work of this department is described under these heads: Requirements for Admission, Courses of Instruction, Requirements for Graduation, Further Description of Courses in Technological and Professional Studies, Rules and Regulations of the Department, Fees and Expenses.

REQUIREMENTS FOR ADMISSION.

Candidates for admission must be at least sixteen years of age, and must present satisfactory evidence of good moral char-

acter. They must be provided with credentials from their last instructor, or from the last institution with which they have been connected. These credentials must be presented to the President at his office, before the candidate can enter upon the examination.

Admission of Candidates for a Degree.

[For Admission to Advanced Standing, see page 88.]

[For Admission of Students not Candidates for a Degree, see page 89.]

Students who desire to become candidates for a degree must, unless admitted on diploma (see page 40), pass examinations in the subjects described below. In 1890 a few modifications of these requirements will become operative. The nature of these modifications is explained in the paragraphs enclosed in brackets.

FOR THE DEGREE OF BACHELOR OF ARTS.

Candidates will be examined in the following subjects.

1. ENGLISH LANGUAGE, COMPOSITION, AND RHETORIC.—The examination will be as follows:

a. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

b. An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing. The subjects for 1889 will be taken from the following works, with the substance of which,—the plots, incidents, characters, etc.,—it is expected that the student will by careful reading thoroughly familiarize himself:—Shakespeare's *Twelfth Night*; Thackeray's *Henry Esmond*; Hawthorne's *Mosses from an Old Manse*. The subjects for 1890 will be taken from Shakespeare's *As You Like It*; Scott's *Guy Mannering*; Kingsley's *Hypatia*. Equivalents of these will, of course, be accepted.

For securing the proper preparation, the following course is recommended: 1. A few lessons and constant practice in the proper use of the *Unabridged Dictionaries*. 2. A review of the elements of *English Grammar* during the last years of the preparatory course. 3. Daily recitations for at least one term in some such work as D. J. Hill's *Elements of Rhetoric and Composition*, or A. S. Hill's *Principles of Rhetoric*. 4. A careful reading of one of Shakespeare's plays, in an annotated edition, as Hudson's, Rolfe's, Meiklejohn's, or one of the Clarendon Press series. 5. Weekly exercises in original composition, for at least two years.

A large proportion of those who seek admission to the University are

found to be very deficient in their preparation in English. It is on every account desirable that such deficiency be removed as far and as fast as possible, and that the requirements in English for admission to the University be enlarged.

2. **GEOGRAPHY.**—Geography of Europe and of the United States, including the general facts of physical geography; Ancient Geography, particularly that of Italy, Greece, and Asia Minor.

3. **HISTORY.**—In Grecian History, the first three books of Smith's History of Greece, exclusive of the chapters on Literature and Art; Leighton's History of Rome, fifty-four chapters, to the accession of Augustus, or an equivalent; Higginson's or Johnston's History of the United States, as far as the close of the Revolutionary War, or an equivalent.

4. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, Ratio, Proportion, the Progressions, and an elementary knowledge of Logarithms; i. e., through Olney's Complete School Algebra, or an equivalent in other authors.

[In 1890 and thereafter the requirement in *Algebra* will read as follows:

Fundamental Rules, Fractions, Simple Equations, Involution and Evolution, the Calculus of Radicals, and Quadratic Equations; i. e., Olney's Complete School Algebra, omitting pages 281-334 and pages 381-390, or an equivalent in other authors.]

Geometry.—Plane, Solid, and Spherical Geometry, as given in Olney's New Elementary Geometry, or an equivalent in other authors.

N. B. It is very desirable that High Schools whose graduates are received on diploma arrange their courses so as to include a portion of both Algebra and Geometry in their last preparatory year; and it is equally important that other students should do the same if they expect to succeed in the study of mathematics in the University.

5. **LATIN.**—*Grammar.*—A thorough preparation in the elements. For this purpose Harkness's, or Allen and Greenough's, Grammar, is recommended.

Prose Composition.—Jones's Exercises in Latin Prose Composition; or Harkness's Introduction to Latin Composition, from page 50 to page 166; or forty-four exercises in Arnold's Latin Prose Composition.

Reading.—Four books of Cæsar's Commentaries; six select Orations of Cicero; and the whole of the Æneid; for the last six books of the Æneid, all the Eclogues and Georgics may be substituted; for the last three, all the Eclogues, or 1,200 lines of Ovid.

The study of the first six books of the Æneid should be accompanied with the study of Prosody. In reading the last six books the principal

aim should be to acquire facility in translation, and increased knowledge of the Latin vocabulary. It is supposed that the student, already familiar with the style of Vergil, will be able to read this portion of the *Æneid* more easily and rapidly than an equal amount in any other text-book.

[In 1890 and thereafter the last three books of the *Æneid* will not be exacted. It is hoped, however, that many schools will still continue to prepare students in the entire *Æneid*, or its equivalent. To encourage such preparation, the announcement is here made that, after 1890, candidates for admission who are prepared on the whole of the *Æneid* or its equivalent will receive a certain amount of credit toward graduation at the University.]

The pronunciation of Latin used in the University is as follows:

VOWELS.

Long.

a as in *father*.
e as in *they*.
i as in *machine*.
o as in *go*.
u as *oo* in *too*.

Short.

a as in *father*, but shorter, (not as in *hat*).
e as in *met*.
i as in *pity*.
o as in *for* (not as in *cot*).
u as in *pull* (not as in *but*).

DIPHTHONGS.

In pronouncing the diphthongs the sound of both vowels is preserved.

ae as *ay*.
au as *ow* in *power*.
oe as *oi* in *oil*.

eu nearly as *u* in *use*.
u in *ua*, *ue*, etc., as *w*.
ei as in *rein*.

CONSONANTS.

c as in *can*.
ch as *k*.
g as in *gun*.
j as *y* in *young*.

s as in *sin*.
t as in *tin*.
v either as French *ou* in *out*, or as English *v*.
 Other consonants as in English.

Four years, if possible, should be given to the above preparatory course in Latin.

6. GREEK.—*Grammar*.—Hadley's, or Goodwin's. The etymology must be thoroughly mastered.

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents and to the general principles of syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis*.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's or White's First Lessons in Greek will be found valuable.

Two full years of daily recitation ought to be given to preparation in Greek.

[In 1890 and thereafter, in addition to the requirements enumerated above, preparation will be required in *Natural Philosophy* and *Botany*, in

amount equal to that exacted from candidates for the degree of Bachelor of Science (see page 36).]

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Candidates will be examined in all the subjects required for the admission of candidates for the degree of Bachelor of Arts (see page 32), excepting what is required in Greek and in Grecian History; and also in French, or in German, the same as for the degree of Bachelor of Science (see below).

[In 1890, and thereafter, the modified requirements in *Algebra* and in *Latin*, and the additional requirements in *Natural Philosophy* and in *Botany* will be in force.]

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Two groups of requirements for admission of candidates for the degree of Bachelor of Science are given below:—the first for students who intend to complete the requirements for graduation in General Science, in Chemistry, or in Biology, as given on subsequent pages; the second for students who intend to pursue courses in Civil, Mechanical, or Mining Engineering.

1. FOR THE COURSE IN GENERAL SCIENCE, IN CHEMISTRY, OR IN BIOLOGY.

Candidates will be examined in the following subjects:

1. **ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.**—In all, the same as for the degree of Bachelor of Arts (see page 32).

[In 1890, and thereafter, the modified requirement in *Algebra* will be in force.]

2. **HISTORY.**—Higginson's or Johnston's History of the United States, as far as the close of the Revolutionary War; and also Freeman's General Sketch of European History, or Swinton's Outlines; or equivalents.

3. **FRENCH, GERMAN, AND LATIN.**—Candidates may offer either French and German; French and Latin; or German and Latin;—two of these three languages being required. The requirements in each are as follows:

French.—The whole subject of French Grammar. The candidate will be expected to be thoroughly familiar with the formation and use of French verbs, to read at sight easy French, and to translate correctly into French simple English sentences. Two years ought to be given to this study, the first year being spent on the grammar, and the second devoted to reading good modern French, accompanied by grammatical analysis and exercises in writing. Hennequin's French text-books are especially recommended; preparation in Fasquelle or Otto will be accepted.

German.—The whole subject of German Grammar. The candidate

will be expected to read easy German at sight, and to translate simple sentences from English into German. To this end he should have devoted two years to the study; one year to the grammar, reader, and the writing of exercises, and a second year to the reading of complete works of literary art. As a text for the second year's study, works in dramatic form, and especially the classical plays of Schiller, are recommended.

Latin.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book; four books of Cæsar's Commentaries, and one of Cicero's Orations. It is expected that about two years will be given to preparation in Latin.

4. NATURAL PHILOSOPHY.—An amount represented by the study, with experimental illustrations, of such a text-book as Avery's Natural Philosophy, or Gage's Elements of Physics.

5. BOTANY.—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class Book of Botany; also, an analysis and written descriptions of fifty species of phanerogams.

6. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—The candidate may offer any *one* of these subjects. The requirements, intended to cover a half year's work in each subject, are as follows:

Chemistry.—Nichols's Abridgment of Eliot and Storer's Manual, Shepard's Chemistry, or an equivalent.

Geology.—Candidates who offer themselves in Geology must be well acquainted with the elements of lithological, dynamical, and historical geology, as presented in Winchell's Geological Studies, or some other good work. Especial stress is laid on familiarity with a dozen or two of the more common species of rocks and their included minerals, on the tables of classification of geological formations, on the general nature of the succession of organic forms, and on the doctrines of sedimentation, erosion, upheaval, and subsidence.

This preparation is intended to furnish some such fitness for more advanced study as is demanded in the departments of mathematics and languages. It is the equivalent of Course 1 in the University. Experience proves, however, that these points are not well understood. Most students presenting themselves for examination hitherto, have failed in thoroughness, readiness, and freshness of knowledge. Candidates are expressly notified that a few week's indifferent instruction, two, or three, or four years previously, without use of specimens, and without any field observation, can never supply that clear and ready acquaintance with the subject which is requisite for more advanced work in the University. Still less can a hasty reading up for examination, in the lack of previous thorough study, answer the requirement.

It is understood that Geology is not usually taught in the preparatory schools, especially of Michigan, in such a way as to secure the requisite preparation. Candidates, therefore, who apply without due preparation, can enter on condition, and supply the deficiency by taking Course 1 or 2. But no "credit" will be given a student passing examination in Course 1 or 2, if a candidate for a degree requiring such study as preparatory for admission. Also, if any candidate for a degree *not* requiring

Geology as a preparatory study, subsequently becomes, after having secured his "credits" in Course 1 or 2, a candidate for a degree *requiring* Geology as a preparatory study, then the credits gained in Geology while candidate for the former degree will be cancelled. Otherwise, the latter degree would not represent the required collegiate study *plus* the prescribed preparation.

Candidates sustaining the required preparatory examination in Geology will be fitted to take Course 3 or 9 in the first semester, or Courses 5 and 6 in the second semester.

Zoology.—Packard's *Zoology*, or Nicholson's *Manual of Zoology*.

Physiology.—Martin's *The Human Body*.

Astronomy.—Newcomb and Holden's *Astronomy*, school edition, or an equivalent. A knowledge of the principal constellations will be required.

II. FOR THE COURSES IN ENGINEERING.

Candidates for a degree in any of the courses in engineering will be examined in the following subjects:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 32).

[In 1890, and thereafter, the modified requirement in *Algebra* will be in force.]

2. HISTORY, AND NATURAL PHILOSOPHY.—In both, the same as for the Course in General Science (see page 35).

3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see below).

4. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—In any *two* of these subjects (see page 36).

FOR THE DEGREE OF BACHELOR OF LETTERS.

Candidates will be examined in the following subjects:

1. ENGLISH LANGUAGE.—The same as for the degree of Bachelor of Arts (see page 32). Inasmuch as no foreign language is required in preparation for this Course, it will be necessary, in order to secure a corresponding grade of attainments, to give more time to the study of the English language than is required in preparation for the other Courses. It is expected that the preparatory schools will devote at least two years of daily recitation to word-analysis, sentence-analysis, composition, and the elements of Rhetoric.

2. ENGLISH LITERATURE.—Daily recitations for at last one year will be requisite. Stopford A. Brooke's *Primer*, or any one of the *Manuals*, may be used for an outline of the subject. As much time as practicable should be given to the careful reading and study of representative authors in each period. Candidates who have devoted special time to the subject, may apply for advanced standing in English Literature.

3. GEOGRAPHY AND MATHEMATICS.—In both, the same as for the degree of Bachelor of Arts (see page 33).

[In 1890, and thereafter, the modified requirement in *Algebra* will be in force.]

4. NATURAL PHILOSOPHY AND BOTANY.—In both, the same as for the degree of Bachelor of Science (see page 36).

5. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—In any one of these, the same as for the degree of Bachelor of Science (see page 36).

[In 1890, and thereafter, the candidate for admission must be prepared on at least *three* of the subjects here enumerated.]

6. HISTORY.—The same as for the degree of Bachelor of Science (see page 35), and, in addition, Gardiner's, Montgomery's, or Thompson's *History of England*.

[In 1890, and thereafter, the requirement in *History* will be increased so as to include the whole of American History, as presented in Johnston's text-book, and the whole of English History, as presented in Ransome's text-book, or an equivalent in other authors.]

7. CIVIL GOVERNMENT.—Martin's.

[In 1890, and thereafter, in place of the *English History* and the *three optional sciences* specified above, the candidate for admission may present *German*, or *French*, or *Latin*, in amount equal to that exacted of candidates for the degree of Bachelor of Science (see page 35). This means about two years' study in some one of these three languages.

With respect to the option here allowed, it may be observed that, inasmuch as a large part of the work required in the University for the degree of Bachelor of Letters consists of French and German, students who intend to take this degree will find it advantageous to begin at least one of these languages in their preparatory course.]

Students will be examined on subjects rather than on specified text-books. Candidates who have not pursued the exact course marked out above will be allowed to present other subjects as equivalents, provided they have the preparation necessary to enter upon the studies required for the degree of Bachelor of Letters, as those studies are taught in the University.

Admission to Advanced Standing.

1. Candidates for advanced standing who do not come from some other university or college will be examined in the studies prescribed for admission, and also in such undergraduate studies as they may ask to be credited with in advance.

2. Students who have completed at least one year's college work in an approved college, and who bring explicit and official certificates describing their courses of study and scholarship, and testifying to their good character, will be admitted without

examination, except such as may be necessary in order to determine what credit they are to receive for work done in the college from which they have come and what courses of study they may profitably pursue here. Students coming from colleges whose requirements for admission are substantially equivalent to those of this Department of the University may thus expect to be able to go on with their work without loss of standing.

3. All students who wish to obtain advance credit for work completed prior to admission to this Department, should make application to the President at the time of matriculation, or as soon thereafter as practicable, and should secure such credits within one year from the date of matriculation. Blank forms for this purpose are provided by the Registrar. After a student's credit has once been adjusted on this account, it cannot be reopened without special vote of the faculty.

Admission of Students not Candidates for a Degree.

Students who desire to pursue studies in this Department, and do not desire to become candidates for a degree, will be admitted on the following conditions:

1. All persons under twenty-one years of age must pass the entrance examinations required of candidates for some degree, as described on previous pages.

2. Persons over twenty-one years of age must show that they have a good knowledge of English and are otherwise prepared to pursue profitably the studies they may desire to take up.

3. Should a student who enters under the preceding provision (2), subsequently become a candidate for graduation, he must pass all the examinations for admission, required of such a candidate, at least one year previous to the time when he proposes to graduate; and in case he wishes to obtain credit for any work completed prior to his admission to this Department, he must make previous application to the President and secure his credit at the time of passing his admission examinations.

Times of Examinations.

An examination for admission to the Department of Liter-

ature, Science, and the Arts, will take place on Saturday and Monday, June 22 and 24, 1889; and another beginning on Wednesday, September 25, and continuing through the Thursday, Friday, Saturday, and Monday following. The examinations will begin at 9 o'clock a. m. of each day. Candidates may take their examination at either of these times, or may take a part in June, and a part in September. In either case it is particularly desired that they present themselves on the first day of the examination.

Examinations for admission will also be held at Chicago, and possibly at some other western cities, on Tuesday and Wednesday, June 25 and 26, 1889. The place and the hours will be announced in the newspapers of those cities.

Admission on Diploma.

The right to admission on diploma, which was formerly limited to students of schools in Michigan, is now extended to students of schools in other States.

On request of the school board in charge of any school, the faculty will designate a committee to visit the school and report upon its condition. Usually this committee will consist of members of the faculty; but whenever, owing to the great distance of a school from Ann Arbor or to some other cause, this is found impracticable, other persons may be designated who under the direction of the faculty may perform the work of inspection.

If the faculty shall be satisfied from the report of their committee that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission of candidates for any one or more of our degrees, then the graduates from *the approved preparatory course or courses* will be admitted to the University without further examination, and permitted to enter upon such undergraduate work as the preparatory studies contemplated. They must present to the President, within a year and three months after their graduation, the diplomas of their school board, certifying that they have sustained their examinations in all the studies prescribed

for admission as candidates for some one of our degrees. They will also be required to appear at once in their places; otherwise they can be admitted only upon examination.

The schools which shall be approved shall be entitled to send their graduates on diploma for a period of three years (inclusive of the year of visitation) without further inspection, provided that the faculty are satisfied that within this period no important changes affecting the course of study and the efficiency of the instruction make another inspection necessary. Otherwise, the faculty reserves the right to require a new inspection if the relation between the school and the University is to be maintained. Should the authorities of any school at any time within this period desire that a committee of inspection visit their school, the faculty will always grant such a request if it is practicable.

It is expected that the superintendent of each approved school shall annually, at a date not later in the year than March first, send to the President a catalogue of the school if one is printed. If no catalogue is published, he will be expected to send a statement, giving the names of the teachers, the number of pupils, and a description of the courses of study.

A circular giving fuller details on this subject can be obtained on application to the President.

The following list comprises the schools approved as qualified to prepare students for admission on diploma in the year 1888. Except where otherwise indicated, the places named are in Michigan, and the school approved is the public high school of the locality.

1. For courses leading to all degrees, viz., A. B., PH. B., B. S., and B. L.: Ann Arbor; Battle Creek; Bay City; Benton Harbor Normal and Collegiate Institute; Coldwater; Decatur, Ill.; Detroit; East Saginaw; Flint; Grand Rapids; Hyde Park, Ill.; Ionia; Jackson; Lake View, Ill.; Manistee; Michigan Military Academy, Orchard Lake; Monroe; Oak Park, Ill.; Peoria, Ill.; Pontiac; Port Huron; Ypsilanti.

2. For courses leading to the degrees of A. B., B. S., and B. L.: Evanston Township, Ill.; Jefferson Township, Ill.

3. For courses leading to the degrees of Ph. B., B. S., and B. L.: Adrian; Alpena; Big Rapids; Chicago, Ill. (North Side, South Side, and West Side); Englewood, Ill.; Lake, Ill.; Lansing; La Porte, Ind.; Marshall; Niles; Owosso; Saginaw.

4. For courses leading to the degrees of A. B., and Ph. B.: Normal University, Academic Department, Normal, Ill.

5. For courses leading to the degrees of A. B., and B. L.: Greenville; Springfield, Ill.

6. For courses leading to the degrees of Ph. B., and B. L.: Caro; Fenton.

7. For courses leading to the degrees of B. S., and B. L.: Benton Harbor; Hastings; Mt. Clemens.

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8. For course leading to the degree of PH. B.: St. Clair.
 9. For course leading to the degree of B. S.: Ludington.
 10. For course leading to the degree of B. L.: Bloomington, Ill.; Cedar Rapids; Charlotte; Corunna; Eaton Rapids; Grand Haven; Howell; Raisin Valley Seminary; Sturgis; Vassar.
- Total, 58 schools.

COURSES OF INSTRUCTION.

The University provides a large number of courses of study in the various branches of learning, from which the student may choose his studies. The studies chosen may be pursued in any order, subject to certain regulations prescribed by the faculty and to be found on a subsequent page. Some further particulars concerning the courses are given in a special Announcement furnished annually to students.

The courses offered are subject to change from year to year. Those offered for the year 1888-9 are as follows:*

GREEK.†

All students, except those who are admitted to advanced standing, are required to pursue Course 1, before passing on to the other Courses; the latter may be taken in the order the student prefers.

FIRST SEMESTER.

1. Lysias, and Xenophon's Symposium. *M, Tu, W, Th*, Sec. I., 10½-11½; Sec. II., 11½-12½. Professor PATTENGILL.
3. Demosthenes; Lectures on the Greek Orators. *M, Tu, W, Th*, 4-5. Professor D'OOGÉ.
5. Teachers' Seminary. *One-fifth Course*. Professor D'OOGÉ.

Course 5 is open only to those who have completed all the required Courses and at least two hours of elective work in Greek.

- 12a. Greek Seminary in Tragedy. Plays selected: Persians and Agamemnon of Æschylus. *M*, 2-4. *Two-fifths Course*. Professor D'OOGÉ.

* For explanation of the terms *one-fifth Course*, *two-fifths Course*, etc., see page 68.

† SCHOOL OF CLASSICAL STUDIES AT ATHENS.—This University, through the generosity of some of its friends, has become a contributor to the support of the American School of Classical Studies at Athens. The school affords facilities for archaeological and classical investigation and study in Greece, and graduates of the Department of Literature, Science, and the Arts of this University are entitled to all its advantages without expense for tuition. Professor M. L. D'Ooge was Director of the School for 1886-87.

- 12b. Greek Seminary in Tragedy. Plays selected: Philoctetes and Œdipus Coloneus of Sophocles. *F*, 2-4. *Two-fifths Course*. Professor D'Ooge.

Courses 12a and 12b may be taken separately or together.

19. Aristophanes (Birds, and Frogs). *Tu, Th*, 9½-10½. Professor PATTENGILL.
22. Lyric Anthology, and Select Odes of Pindar. *Tu, Th*, 3-4. Professor D'Ooge.
24. Plato (Symposium, and Laches). *M, W*, 9½-10½. Professor PATTENGILL.
27. Aristotle (Nicomachæan Ethics.) *Two-fifths Course*. Professor D'Ooge.

SECOND SEMESTER.

6. Homer (Odyssey). *Tu, W, Th*, Sec. I., 4-5. Professor D'Ooge.
Tu, W, Th, Sec. II., 10½-11½. Professor PATTENGILL.
7. Euripides (Medea); Aristophanes (Clouds). *M, Tu, W, Th*, 11½-12½. Professor PATTENGILL.
8. Greek Seminary. Studies in Euripides. *F*, 9-11. *Two-fifths Course*. Professor PATTENGILL.
10. Teachers' Seminary. *One-fifth Course*. Professor D'Ooge.
Course 10 is a continuation of Course 5, and both are required for the Teacher's Diploma.
13. History of Greek Literature. Lectures and recitations. *F*, 4-5. Professor D'Ooge.
14. Greek Antiquities. Lectures on the public and private life and customs of the Greeks, illustrated by means of lantern views. *W, F*, 3-4. Professor D'Ooge.
16. Selections from the Minor Greek Poets. *Tu, Th*, 9½-10½. Professor PATTENGILL.
21. Plato (Selections from the Gorgias and the Phædo). *M, Th*, 3-4. Professor D'Ooge.
26. Modern Greek. *Tu, F*, 2-3. Professor D'Ooge.

LATIN.

Courses 1 and 6 must precede all the rest.

FIRST SEMESTER.

1. Livy (Book XXI.); Grammar; Prose Composition. *Tu, W, F*, Sec. I., 11½-12½; Sec. II., 2-3; Sec. III., 3-4; Sec. IV., 4-5. Mr. DRAKE.
2. Quintilian (Book X.); Horace (Ars Poetica); Lectures on Roman Literature, accompanied by recitations in Cruttwell's Roman Literature, and by brief analyses of authors. *Tu, W, Th, F*, Sec. I., 9½-10½; Sec. II., 10½-11½. Assistant Professor MILLER.
3. Pliny (Letters). Lectures. *Tu, Th*, 10½-11½. Professor FRIEZE.
4. Classical Antiquities and Art, with the Latin text of Pliny the

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Elder on Ancient Sculpture and Painting. Lectures. *Tu*, Sec. I., 4-5; *Th*, Sec. II., 4-5. Professor FRIEZE.

Course 4 can be taken only by those who have completed either the work required for some degree, or an equivalent of such work.

5. Teachers' Seminary (*Æneid*). *M*, 5-6. Professor FRIEZE.

Course 5 must be preceded by Courses 1, 2, 6, 8, and 9. Applicants for admission to Course 5 must be approved by the professors and instructors in Latin.

9. Tacitus (*Germania*, and *Agricola*). Lectures. *M*, *W*, *F*, 10½-11½. Professor FRIEZE.

18. Plautus (Selected Plays). *M*, *W*, 11½-12½. Assistant Professor MILLER.

SECOND SEMESTER.

6. Terence (*Andria*, and *Adelphi*); Horace (*Epodes*, and *Epistles*). *M*, *Tu*, *W*, *F*, Sec. I., 11½-12½; Sec. II., 2-3; Sec. III., 3-4; Sec. IV., 4-5. Mr. DRAKE.

7. Horace (*Odes*, Books I.-IV.). *M*, *W*, 8¼-9¼. Assistant Professor MILLER.

8. Horace (*Satires*); Juvenal (*Satires*); Persius (*Satire V.*). *Tu*, *W*, *Th*, *F*, Sec. I., 9½-10½; Sec. II., 10½-11½. Assistant Professor MILLER.

10. Cicero (*Tusculan Disputations*). Lectures. *M*, *W*, 11½-12½. Professor FRIEZE.

12. Teachers' Seminary (Prose Composition). *M*, 5-6. Mr. DRAKE.

Course 12 must be preceded by Courses 1, 2, 6, 8, and 9. Applicants for admission to Course 12 must be approved by the professors and instructors in Latin.

14. Seneca (*Essays*). Lectures. *Tu*, *Th*, 10½-11½. Professor FRIEZE.

15. Seneca (*Tragedies*). Lectures. *M*, *W*, *F*, 10½-11½. Professor FRIEZE.

SANSKRIT.

FIRST SEMESTER.

1. Beginners' Course. Recitations from Whitney's *Sanskrit Grammar*, accompanied by lectures upon the comparative phonetics of the Sanskrit, Greek, Latin, and Germanic languages. *Two-fifths Course*. Assistant Professor MILLER.

Course 1 is open to candidates for a degree in Arts, who have pursued the study of Latin and Greek in the University at least four semesters, and have also some knowledge of German.

3. Advanced Reading: Kalidasa's *Sakuntala*, Act I. *One-fifth Course*. Assistant Professor MILLER.

Course 3 must be preceded by Course 2.

SECOND SEMESTER.

2. Interpretation of texts contained in Lanman's Sanskrit Reader.
Two-fifths Course. Assistant Professor MILLER.

Course 2 must be preceded by Course 1. At the wish of the class Course 2 is converted into a *three-fifths Course*, the additional hour being given to the reading and discussion of papers upon linguistic subjects.

4. Advanced Reading: Kalidasa's Sakuntala, Acts II. and III. *One-fifth Course.* Assistant Professor MILLER.

Course 4 must be preceded by Course 2; but need not be preceded by Course 3.

MATHEMATICS.

FIRST SEMESTER.

2. Analytic Geometry and Calculus. *M, Tu, W, Th, 3-4.* Professor BEMAN.

Course 2 cannot be taken till after Courses 1 and 5 (or 5a) have been completed.

3. Advanced Analytic Geometry and Calculus. *M, Tu, W, Th, F, 4-5.* Professor BEMAN.

Course 3 cannot be taken till after Course 6 or Course 16 has been completed.

4. Modern Higher Algebra. *Tu, Th, 11½-12½.* Mr. COLE.

Course 4 cannot be taken till after Courses 1 and 5a have been completed.

5. Trigonometry; Analytic Geometry. *M, Tu, W, Th, Sec. I., 5-6.* Mr. ZIWET. *Sec. II., 5-6.* Mr. PURYEAR.

- 5a. Trigonometry; Analytic Geometry. *Three-fifths Course.* Mr. ZIWET and Mr. PURYEAR.

11. Analytical Mechanics. *M, Tu, W, Th, F, 5-6.* Mr. COLE.

Course 11 requires a knowledge of Integral Calculus.

13. Analytic Geometry and Calculus. *M, Tu, W, Th, F, Sec. I., 3-4; Sec. II., 4-5.* Mr. COLE.

Course 13 cannot be taken till after Courses 1 and 5 (or 5a) have been completed.

17. Mathematical Reading. *M, Tu, W, Th, F, 2-3.*

Course 17 is designed to give advanced students an opportunity to read standard mathematical works under the direction of the Faculty.

SECOND SEMESTER.

1. Advanced Algebra. *Four-fifths Course.* Mr. ZIWET and Mr. PURYEAR.

6. Analytic Geometry and Calculus, continuation of Course 2. *M, Tu, W, Th, 3-4.* Professor BEMAN.

7. Differential Equations. *Tu, Th, 2-3.* Professor BEMAN.

Course 7 cannot be taken till after Course 6 or Course 16 has been completed.

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9. Quaternions. *Tu, W, Th, 4-5.* Professor BEMAN.

Course 9 is an advanced Course, open only to those who receive special permission from the instructor in charge.

16. Analytic Geometry and Calculus, continuation of Course 13. *M, Tu, W, Th, F, Sec. I., 3-4; Sec. II., 4-5.* Mr. COLE.

17. Mathematical Reading. *M, Tu, W, Th, F, 2-3.*

See note to Course 17 in first semester.

18. Mathematical Theory of Electricity. *Two-fifths Course.* Mr. COLE.

19. Elements of the Theory of Functions. *Two-fifths Course.* Mr. COLE.

FRENCH.

Courses 1 and 5 must precede all others. Students who are required to take one and three-fifths Full Courses in French beyond Courses 1 and 5, are allowed to select from the Courses open to them.

FIRST SEMESTER.

1. Beginning French. *M, W, Th, F, Sec. I., 8¼-9¼; Sec. II., 9½-10½; Sec. III., 2-3; Sec. IV., 3-4.* Mr. McCABE.

2. Idiomatic Analysis. *M, Th, Sec. I., 9½-10½.* Assistant Professor de PONT. *M, Th, Sec. II., 9½-10½* (Hennequin's Lessons in Idiomatic French). Professor WALTER.

Course 2 is conducted mostly in French, and is designed for those who desire practice in colloquial French.

3. French Classic Dramas. *M, W, F, 11½-12½.* Professor WALTER.

Course 3 is open to all candidates for the degree of A. B., who have passed Courses 1 and 5, and to such others as receive special permission.

10. Crane's *Le Romantisme Français*, *W, F, 10½-11½.* Professor WALTER.

11. Composition and Translation from English into French. *W, F, 9½-10½.* Assistant Professor de PONT.

12. Seminary. Critical, literary, and historical study of authors by composition and conversation (Allais's Method). *M, Th, 10½-11½.* Assistant Professor de PONT.

Course 12 must be preceded by Course 13.

13. LaFontaine (*Fables Choiesies*). Advanced practice in conversation and analysis. *W, F, 10½-11½.* Assistant Professor de PONT.

Course 13 must be preceded by Courses 2, 3, and 11.

SECOND SEMESTER.

4. Scientific Reading. *M, W, Th, F, 2-3.* Assistant Professor de PONT.
Course 4 is designed especially for engineering and scientific students.

5. French Plays and Modern Prose; Grammatical Analysis. *M, W, Th, F, Sec. I., 8¼-9¼; Sec. II., 9½-10½; Sec. III., 2-3; Sec. IV., 3-4.* Mr. McCABE.

7. Montaigne. *W, F, 10½-11½.* Professor WALTER.

The requirements for admission to Course 7 are the same as to Course 3.

9. Teachers' Course. *Two-fifths Course*. Professor WALTER.

Course 9 is open only to such as receive special permission.

15. Seminary. Théâtre de Voltaire. *M, Th, 3-5. Four-fifths Course*. Assistant Professor de PONT.

Course 15 must be preceded by Course 12.

16. Rousseau and Montesquieu. *Contrat Social and Esprit des Lois. M, W, F, 11½-12½*. Professor WALTER.

Course 16 is open only to those who receive special permission.

ITALIAN.

FIRST SEMESTER.

1. Grandgent's Italian Grammar. Reader. *Tu, Th, 11½-12½*. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.

3. Dante (*Divina Commedia*). Lectures and recitations. *Tu, Th, 10½-11½*. Professor WALTER.

Course 3 must be preceded by Courses 1 and 2.

SECOND SEMESTER.

2. Continuation of Course 1. *Tu, Th, 11½-12½*. Professor WALTER.

SPANISH.

SECOND SEMESTER.

1. Knapp's Spanish Grammar and Spanish Readings. *Tu, Th, 8¼-9¼*. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 5 in French, or an equivalent.

GERMAN.

The required work in German is all included in Courses 1, 2, 3, and 4, which are to be taken in the regular order of the numerals, the student selecting at pleasure under each number one or more from among the options given. Courses 7, 8, 9, 10, and 11 are for advanced students; admission is by special application in advance.

FIRST SEMESTER.

1. Beginners' Course. Joynes-Meissner's German Grammar, and Wenckebach's German Reader. *T, W, Th, F, Sec. I., 8¼-9¼; Sec. II., 9½-10½. Mr. RHOADES. Sec. III., 10½-11½; Sec. IV., 11½-12½. Mr. CLARY.*

3. Plays of Goethe and Lessing:—

- a. Goethe's Tasso. *M, W, F, Sec. I., 2-3; Sec. II., 3-4.* Professor THOMAS.

- b. Goethe's Egmont. *M, W, F, 9½-10½.* Mr. CLARY.
- c. Goethe's Iphigenie and Prometheus. *M, W, F, 4-5.* Mr. CLARY.
- d. Lessing's Nathan der Weise. *M, W, F, Sec I., 10½-11½; Sec. II., 11½-12½.* Mr. RHOADES.
- 5. Goethe's Faust (First Part). *Tu, Th, 2-3.* Professor THOMAS.
Course 5 is open to those who have completed two and three-fifths Full Courses in German; to others only by special permission.
- 7. Middle High German. The Nibelungenlied. *Tu, Th, 8¼-9¼.* Professor THOMAS.
- 9. Seminary for German Literature of the Eighteenth Century. *Two-fifths Course.* Professor THOMAS.
- 14. Readings in Chemical Literature. *One-fifth Course.* Mr. NOVY.

SECOND SEMESTER.

- 2. Plays of Schiller with exercises in writing German:—
 - a. Die Jungfrau von Orleans. *Tu, W, Th, F, Sec. I., 2-3; Sec. II., 3-4.* Mr. RHOADES.
 - b. Wilhelm Tell. *Tu, W, Th, F, Sec. I., 11½-12½.* Mr. CLARY. Sec. II., 4-5. Mr. RHOADES.
- 4. Rapid Reading in Classical and Scientific Prose:
 - a. Goethe's Dichtung und Wahrheit. *M, Th, Sec. I., 9½-10½; Sec. II., 10½-11½.* Mr. CLARY.
 - b. Selections from minor classics. *Tu, F, Sec. I., 9½-10½.* Mr. CLARY.
 - c. Schiller's Geisterseher. *M, Th, 8¼-9¼.* Mr. RHOADES.
 - d. Scientific Reading. *Tu, Th, 8¼-9¼.* Professor THOMAS.
- 6. Goethe's Faust (Second Part). *W, F, 8¼-9¼.* Professor THOMAS.
- 8. Middle High German. Der arme Heinrich. Walter von der Vogelweide. *M, W, 9½-10½.* Professor THOMAS.
- 10. Seminary for German Literature of the Nineteenth Century. *Two-fifths Course.* Professor THOMAS.
- 11. Lessing's Laokoon. *Tu, Th, 10½-11½.* Professor THOMAS.
Course 11 is open to those who have completed two and three-fifths Full Courses in German: to others only by special permission.
- 12. German Lyric Poetry. Recitations from Buchheim's Deutsche Lyrik. *M, W, 8¼-9¼.* Mr. CLARY.
- 13. Schiller's Poems. *M, Th, 2-3.* Mr. CLARY.
- 15. Readings in Chemical Literature, continuation of Course 14. *One-fifth Course.* Mr. NOVY.

GOTHIC.

SECOND SEMESTER.

- 1. Gothic Grammar, with interpretation of texts and comparative study of Germanic word forms. The text-book used is Braune's

Gotische Grammatik, or the translation of the same by G. H. Balg. *Two-fifths Course.* Professor THOMAS.

SWEDISH.*

The Courses in Swedish are open only to students who have taken two and three-fifths Full Courses in German.

FIRST SEMESTER.

1. Modern Swedish Grammar, with readings from Tegnér and Runeberg. *One-fifth Course.* Professor THOMAS.

SECOND SEMESTER.

2. Continuation of Course 1. *One-fifth Course.* Professor THOMAS.

ENGLISH AND RHETORIC.

FIRST SEMESTER.

1. Composition and Speeches. Each student will present two speeches. *M, Th, Sec. I., 2-3. Tu, F, Sec. II., 2-3; Sec. III., 3-4.* Mr. LANGE.
2. Rhetoric. Lectures and text-book. Each student will present at least two essays. Additional essays are required if in any case they are deemed necessary. *M, W, Sec. I., 2-3; Sec. II., 3-4.* Assistant Professor GAYLEY.

Course 2 must be preceded by Course 1, and by Course 1 or Course 3 in Philosophy.

- 2a. Rhetorical Criticism, supplementary to Course 2. Students will apply the principles of style in the criticism of essays presented in Course 2. *F, Sec. I., 2-3; Sec. II., 3-4.* Assistant Professor GAYLEY.
3. Forensics. *W, 4-6. Two-fifths Course.* Assistant Professor GAYLEY. Course 3 must be preceded by Courses 1 and 2.
4. English Literature; Period of Anglo-Saxon. Text-books: Sweet's Anglo-Saxon Primer and Sweet's Reader (Prose). *M, W, Sec. I., 3-4; Sec. II., 4-5.* Mr. LANGE.
5. English Literature; Period of Early Modern English. Text-books: Morris's Prologue and Knight's Tale, and Morley and Tyler's Manual of English Literature, Part III. *Tu, Th, Sec. I., 2-3; Sec. II., 3-4.* Assistant Professor GAYLEY.

Course 5 must be preceded by Course 1, and it is recommended that it be preceded also by Courses 4 and 9.

6. English Literature; Study of Masterpieces: More's Utopia; Bacon's Essays; Milton's Areopagitica; Burke's Reflections on the French Revolution; Carlyle's Sartor Resartus; George Eliot's Silas Mar-

* In 1880-90 the Courses in Swedish will be omitted, and in their place Courses in Danish-Norwegian will be given.

ner; Spenser's Faery Queen, Book I.; Shakespeare's Sonnets; Milton's Paradise Lost; Dryden's Absalom and Achitophel; Pope's Essay on Man; Wordsworth's Excursion; Tennyson's Princess. *Twice a week (once two hours; once one hour).* M, Sec. I., 4-6; Tu, Sec. II., 4-6; W, Sec. III., 4-6; F, Secs. I., II., and III., 4-5. *Three-fifths Course.* Professor DEMMON.

Course 6 must be preceded by Courses 2, 5, and 10.

20. Teachers' Course in English Grammar, critical and practical, on the basis of Whitney's Essentials of English Grammar, and H. R. Greene's English Language. *Two-fifths Course.* Professor DEMMON.

Course 20 is open to students who have passed Course 1 and have taken or are taking Course 4.

SECOND SEMESTER.

1. Composition and Speeches. Each student will present two speeches. M, W, Sec. I., 2-3. Tu, Th, Sec. II., 2-3; Sec. III., 3-4. Mr. LANGE.
2. Rhetoric. Lectures and text-book. Each student will present two essays. Additional essays are required if in any case they are deemed necessary. Tu, Th, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.
- 2a. Rhetorical Criticism, supplementary to Course 2. Students will apply the principles of style in the criticism of essays presented in Course 2. F, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.
9. English Literature; Period of Transitional English. Text-book: Morris's Specimens of Early English, Part I. M, W, 3-4. Mr. LANGE.
10. English Literature; Period of Modern English. Lectures and text-book (Morley and Tyler's Manual of English Literature, Part IV.). M, W, Sec. I., 2-3; Sec. II., 3-4. Assistant Professor GAYLEY.
Course 10 must be preceded by Course 5.
11. English Literature; Study of Shakespeare. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Richard II., the two parts of Henry IV., Henry V., Richard III., Hamlet, Macbeth, Othello, King Lear, and Coriolanus. *Twice a week (once two hours; once one hour).* M, Sec. I., 9½-11½; Sec. II., 4-6; Tu, Sec. III., 4-6; F, Secs. I., II., and III., 4-5. *Three-fifths Course.* Professor DEMMON.

Course 11 must be preceded by Course 6.

14. The History of the English Drama. Lectures. Th, 3-4. Professor DEMMON.

Course 14 must be preceded by Courses 5 and 10.

17. Advanced Course in Anglo-Saxon. Text-book: Sweet's Reader (Poetry). *Two-fifths Course*. Mr. LANGE.
18. American Literature Seminary. Authors studied: Irving, Poe, Hawthorne, Bryant, Longfellow, Emerson, Bayard Taylor, Whittier, Holmes, Lowell, Howells and James. *Two-fifths Course*. Professor DEMMON.

Course 18 must be preceded by Course 6. Representative works of the authors above named will be studied and compared with masterpieces of British authors, and an attempt made to discover the distinctively "American" element.

19. Seminary in Rhetoric and the Principles of Literary Criticism. Reading and discussion of the whole or of some parts of some standard work or works on rhetoric and literary criticism. *Twice a week (once two hours; once one hour)*. *Three-fifths Course*. Assistant Professor GAYLEY.

Course 19 is open to students who have passed Course 2.

COURSES IN ELOCUTION AND ORATORY.

The following Courses in Elocution and Oratory, designated as English 7, 7a, 12, and 13, are also given in the second semester.

7. Elocution. Exercises in vocal culture, breathing, articulation, and pronunciation; position and gesture; quality and force of voice, with their applications. *M, W, 10½-11½*. Mr. T. C. TRUEBLOOD.
- 7a. Elocution. Exercises in vocal culture continued; pitch and time and their subdivisions. *M, W, 11½-12½*. Mr. T. C. TRUEBLOOD.
12. Study of Great Orators (Sources of Oratorical Power). Demosthenes, Cicero, St. Chrysostom, Bossuet, Pitt, Burke, Webster. *Tu, Th, 10½-11½*. Mr. T. C. TRUEBLOOD.
- Course 12 must be preceded by Courses 7 and 7a, or their equivalent.
13. Reading and Study of two of Shakespeare's Plays. Plays selected: Julius Caesar, and Much Ado About Nothing. *M, W, 8¼-9¼*. Mr. T. C. TRUEBLOOD.

Course 13 must be preceded by Courses 7 and 7a, or their equivalent.

HISTORY.

FIRST SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F, Sec. I., 4-5; Sec. II., 5-6*. Assistant Professor McLAUGHLIN.
- 1a. Political and Constitutional History of England. Text-book: Ransome. *Two-fifths Course*. Assistant Professor McLAUGHLIN.

Course 1a is offered to students who have had either Course 1 or

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Course 9, as these Courses were given in previous years, but not to students who have had both.

7. General History of Europe during the Sixteenth and Seventeenth Centuries. Lectures. *Tu, Th*, 8¼-9¼. Professor HUDSON.
10. Constitutional History of the United States. Text-book: Von Holst. *Tu, Th*, Sec. I., 4-5; Sec. II., 5-6. Assistant Professor McLAUGHLIN.

Course 10 must be preceded by Course 1 or Course 15.

12. Historical Seminary. Constitutional History of the United States. *F*, 9½-11½. *Two-fifths Course*. Professor HUDSON.

Course 12 must be preceded by Courses 1, 10, and 14.

16. Constitutional Law of the United States. Text-book: Cooley. *Tu, Th*, 9½-10½. Assistant Professor McLAUGHLIN.

Course 16 must be preceded or accompanied by Course 10.

21. The History of Europe since the Congress of Vienna. Text-book: Mueller. *M, W*, 9½-10½. Professor HUDSON.

Course 21 must be preceded by at least one Course in History.

24. Comparative Constitutional Law. Lectures. *M, W*, 5-6. Professor HUDSON.

Course 24 is designed only for advanced students, and must be preceded by at least three Courses in History.

SECOND SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F*, Sec. I., 4-5; Sec. II., 5-6. Assistant Professor McLAUGHLIN.

- 1a. Political and Constitutional History of England. Text-book: Ransome. *Two-fifths Course*. Assistant Professor McLAUGHLIN.

See note to Course 1a in first semester.

4. Seminary. Comparative Constitutional Law. *F*, 9½-11½. *Two-fifths Course*. Professor HUDSON.

Course 4 must be preceded by Course 24.

14. Constitutional History of the United States, continuation of Course 10. Text-book: Vol Holst. *Tu, Th*, Sec. I., 4-5; Sec. II., 5-6. Assistant Professor McLAUGHLIN.

15. American Colonial History. Lectures and text-book. *W, F*, 2-3. Assistant Professor McLAUGHLIN.

17. The History of the Middle Ages. Text-book: Guizot. *M, W*, 9½-10½. Professor HUDSON.

22. The History of Europe during the Eighteenth Century. Lectures. *Tu, Th*, 8¼-9¼. Professor HUDSON.

Course 22 must be preceded by Course 1.

23. The History of the French Revolution. Lectures. *M, W*, 5-6. Professor HUDSON.

PHILOSOPHY.

Candidates for a degree may take either Course 1 or Course 3 as the prescribed Course in Philosophy. No elective work in this subject can be taken until the prescribed work has been completed or, at least, begun. Students are recommended to take up Formal Logic in their second year, and Empirical Psychology in their third year of University residence.

A student wishing to take all the Courses offered in Philosophy would be advised to take them in about the following order:

Second year, second semester, Course 3.

Third year, first semester, Courses 1, 4, 8 or 11.

Third year, second semester, Courses 5, 6, 10.

Fourth year, first semester, Courses 2, 7, 8 or 11, 12.

Fourth year, second semester, Courses 9, 13, 14.

FIRST SEMESTER.

1. Empirical Psychology. Text-book: Dewey's Psychology. *Tu, W, F*, Sec. I., 8¼-9¼; Sec. II., 9½-10½. Mr. HOUGH.
2. Real Logic, or the Principles of Philosophy. Lectures. *Tu, W, F*, 10½-11½. Professor MORRIS.
Course 2 must be preceded by Courses 3, 4, and 5.
4. The History of Philosophy; ancient and mediaeval. Lectures. *Tu, Th, F*, 11½-12½. Professor MORRIS.
7. Seminary. Locke's Essay, and Berkeley's Principles. *Sat*, 10½-12½. *Two-fifths Course*. Mr. HOUGH.
Course 7 must be preceded by Courses 1, 3, 4, and 5.
- [8. Political Philosophy. Lectures. *M, W*, 11½-12½. Professor MORRIS.
Course 8 is omitted in 1888-89.]
11. Aesthetics; or, The Philosophy of the Beautiful in Nature, and in the Products of Human Art. Lectures. *M, W*, 11½-12½. Professor MORRIS.
Course 11 must be preceded by Course 1 or Course 3.
12. Physiological Psychology. Text-book: Ladd. *M, Th*, 9½-10½. Mr. HOUGH.
Course 12 is open to those who have taken or are taking Course 1.

SECOND SEMESTER.

3. Formal Logic. Jevons's Lessons in Logic. *Tu, Th*, Sec. I., 8¼-9¼; Sec. II., 9½-10½; *W, F*, Sec. III., 8¼-9¼. Mr. HOUGH.
5. The History of Philosophy; modern. Lectures. *Tu, Th, F*, 11½-11½. Professor MORRIS.
Course 5 must be preceded by Course 4 or its equivalent.
6. Ethics. Lectures. *W, F*, 10½-11½. Professor MORRIS.
Course 6 should be preceded by Course 1.
9. Seminary. Hegel's Logic. *M, W*, 11½-12½. Professor MORRIS.

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Course 9 is open only to those who have taken Courses 2, 3, 4, and 5.

10. The Principles of Science. Lectures and recitations. *W, F, 9½-10½.* Mr. HOUGH.

Course 10 is open to those who have taken Courses 1 and 3.

- [13. Speculative Psychological Problems. Lectures. *W, F, 9½-10½.* Mr. HOUGH.

Course 13 is omitted in 1888-89.]

14. Seminary. Hume's Treatise on Human Nature. *Sat, 10½-12½.* *Two-fifths Course.* Mr. HOUGH.

Course 14 must be preceded by Courses 1, 3, 4, and 5.

THE SCIENCE AND THE ART OF TEACHING.

A prescribed course of reading is required in connection with Courses 1 and 2. Courses 1 and 2, and one of the three-hour Courses are requisite to obtain a Teacher's Diploma. Students whose purpose is to prepare themselves for ordinary school-room duties, are advised to pursue Course 1, if they can take but one; those who propose to assume the management of high schools, or of graded schools, should take Course 3 in connection with Course 1.

FIRST SEMESTER.

1. Practical: the arts of teaching and governing; methods of instruction and general school-room practice; school hygiene; school law. Recitations and lectures. Text-book: Fitch's Lectures on Teaching. *Tu, W, Th, F, 2-3.* Professor HINSDALE.
3. School Supervision: embracing general school management, the art of grading and arranging courses of study, the conduct of institutes, etc. Recitations and lectures. Text-book: Payne's Chapters on School Supervision. *M, W, F, 8¼-9¼.* Professor HINSDALE.
5. History of Education; ancient and mediaeval. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th, 5-6.* Professor HINSDALE.

SECOND SEMESTER.

2. Theoretical and critical: the principles underlying the arts of teaching and governing. Lectures. *Tu, W, Th, F, 2-3.* Professor HINSDALE.
4. Seminary for the study and discussion of special topics in the history and philosophy of education. *M, W, 8¼-9¼.* Professor HINSDALE.
6. The comparative study of educational systems, domestic and foreign. Lectures. *Tu, Th, 8¼-9¼.* Professor HINSDALE.
7. History of Education; modern. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th, 5-6.* Professor HINSDALE.

POLITICAL ECONOMY.

FIRST SEMESTER.

1. Principles of Political Economy. Lectures and recitations. Lectures, *M, W, F*, 2-3. Professor ADAMS. Recitations, *Tu*, Sec I., 2-3; *Th*, Sec. II., 2-3; *F*, Sec. III. 3-4. Mr. HICKS.
4. Principles of the Science of Finance. Lectures. *M, W, F*, 11½-12½. Professor ADAMS.

Course 4 must be preceded by Course 1.

6. History of Economic Thought. Text-book: Ingram's History of Political Economy; with assigned readings. *Tu*, 10½-12½. *Two-fifths Course*. Professor ADAMS.

Course 6 must be preceded by Course 1, and by either Course 2 or Course 3.

8. Seminary in Economics. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor ADAMS.

Course 8 is designed for candidates for advanced degrees.

SECOND SEMESTER.

2. Unsettled Questions in Political Economy. Lectures, embracing a history of the development of Political Economy since Mill, commercial crises, free trade and protection, railroads, and immigration. *M, W, F*, 2-3. Professor ADAMS.

Course 2 must be preceded by Course 1.

3. Social and Industrial Reforms. Lectures, embracing a discussion of the development of industrial classes, poor-law legislation, criminal legislation, the labor problem, and socialism. *Tu, Th*, 11½-12½. Professor ADAMS.

Course 3 must be preceded by Course 1.

7. Tariff Legislation in the United States. Text-book: Taussig's Tariff History of the United States; with assigned readings. *M*, 10½-12½. *Two-fifths Course*. Professor ADAMS.

Course 7 must be preceded by Courses 1, 2, and 4.

9. Seminary in Economics. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor ADAMS.

Course 9 is designed for candidates for advanced degrees.

INTERNATIONAL LAW.

FIRST SEMESTER.

1. Lectures on International Law. *Tu, Th*, 2-3. President ANGELL.

Course 1 is open only to those who have completed two Courses in History; Course 7 is especially recommended as one of the two.

SECOND SEMESTER.

2. History of Treaties. *Tu, Th*, 2-3. President ANGELL.

Course 2 must be preceded by Course 1.

PHYSICS.

FIRST SEMESTER.

7. Theoretical Physics. Lectures, *Tu, Th*, 8¼-9¼. Professor CARHART.
For admission to Course 7, the requirements are Course 10 and a knowledge of the Calculus.
10. Mechanics, Sound, and Light. *M, Tu, W, Th, F*, 11½-12½. Professor CARHART.

Course 10 is open to those who have passed an entrance examination in Physics, and to all others who may be found to have sufficient preparation. A knowledge of Plane Trigonometry is indispensable.

11. Electrical units and measurements. Lectures, *twice a week*, 2-3; laboratory work, *three times a week*, between 2 and 5. Professor CARHART and Mr. PUTNAM.

Course 11 must be preceded by Course 13 or an equivalent.

12. Advanced Physical Laboratory work. *Three times a week*, between 2 and 5. Professor CARHART and Mr. PUTNAM.

Course 12 must be preceded by Course 3 or an equivalent.

- 12a. Advanced Physical Laboratory work. *Five times a week*, between 2 and 5. Professor CARHART and Mr. PUTNAM.

Course 12a must be preceded by Course 3 or an equivalent.

SECOND SEMESTER.

3. Physical Laboratory work for beginners. *Three times a week*, between 2 and 5. Professor CARHART and Mr. PUTNAM.

Course 3 must be preceded by Course 10, and Course 7 is recommended.

13. Electricity, Magnetism, and Heat. *M, Tu, W, Th, F*, 10½-11½. Professor CARHART.

Course 13 constitutes a basis for laboratory work in these topics. It must be preceded by Course 10.

14. Dynamo-Electric Machinery. Text-book and lectures, *twice a week*; laboratory work, *once a week*. Professor CARHART and Mr. PUTNAM.

Course 14 must be preceded by Courses 11 and 13.

15. Geometrical Optics. *Twice a week*, 8¼-9¼. Professor CARHART.
The requirements for admission to Course 15 are Course 10 and a knowledge of the Calculus.

GENERAL CHEMISTRY.

To students desiring a competent knowledge of General Chemistry, the following electives are suggested: first year, Course 10 in Physics, and Course 2 in General Chemistry; second year, Courses 3 and 5 in General Chemistry.

To those desiring to study Analysis, Course 2 and either Course 4 or

Course 5 in General Chemistry are suggested as furnishing a good preparation for work in Applied Chemistry.

SECOND SEMESTER.

2. Experimental and general lectures, with recitations. *M, W, F, 11½-12½.* Mr. VAN SLYKE.

Course 2 must be preceded by Course 10 in Physics, or an equivalent.

3. Lectures and recitations on the Kinetic Theory of Gases and on Chemical Philosophy. *Tu, Th, 9½-10½.* Mr. VAN SLYKE.

Course 3 must be preceded by Course 2, and it is recommended that it also be preceded either by Course 4 or Course 5 in General Chemistry, or by one or more Courses in Analytical Chemistry.

4. Laboratory methods of studying General Chemistry and Electro-Chemistry. *Three times a week, two hours each exercise.* Mr. VAN SLYKE.

Courses 4 and 5 must be preceded by Course 2, or an equivalent; they make use of laboratory methods for general, as distinguished from technical, purposes.

5. The same subject as in Course 4. *Five times a week.* 5a. Teachers' Course,—the same as Course 5, *four times a week*, with the addition of one exercise each week in the art of giving experimental lectures in Chemistry. Mr. VAN SLYKE.

Course 5a is one of the Courses which lead to a Teacher's diploma.

6. Gas Analysis. *Three-fifths Course.* Mr. VAN SLYKE.

Course 6 must be preceded by Course 5, or its equivalent in Analytical Chemistry.

ANALYTICAL CHEMISTRY AND ORGANIC CHEMISTRY.

The laboratory work requires from two to three hours daily, taken, in the first semester, between 1 and 5; in the second semester, between 1 and 6. Permission for forenoon hours in the laboratory is given when necessary.

Those entering upon the study of Analytical Chemistry for the purpose of science, irrespective of technical application, should first take Courses 1 or 3, and 5, and if possible should reach Course 11. In Organic Chemistry, Course 6 should be taken first, and either Course 7 or Course 15 may be taken next. In Synthetic Research, Courses 6, 6a, 7, 7a, and 11 may be taken. For Commercial Analysis, Courses 6, 6a, and 15 should be taken. For Metallurgical Analysis, Courses 1, 5, 8, 9, 12, and 16 are required. In preparation for Physiological Chemistry, Courses 1, 5, and 6 are recommended.

FIRST SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F, Sec. I., 8¼-9¼; Sec. II., 9½-10½; laboratory work, daily. Ten-fifths Course.* Assistant Professor JOHNSON.

6. Organic Chemistry. Lectures. *M, W, F, 10½-11½.* Professor PRESCOTT.

Course 6 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry, or Course 2 in General Chemistry.

EITHER FIRST OR SECOND SEMESTER.

5. Quantitative Analysis. *From October 1 to the holiday vacation; or from the last Monday in March to the end of the year.* Lectures, *three times a week*; laboratory work, *daily.* *Five-fifths Course.* Mr. BROWNE.

Course 5 is open to those who have taken Course 1 or Course 3.

- 6a. Organic Chemistry. Laboratory work. *Two-fifths Course.* Professor PRESCOTT.

Course 6a is open to those who have taken Course 1 or Course 3. It must also be preceded or accompanied by Course 6.

7. Organic Chemistry. Ultimate Analysis and Synthetic Preparations. Laboratory work. *Five-fifths Course.* 7a. Continuation of Course 7, and of the same extent. Professor PRESCOTT.

Course 7 is open to those who have taken Courses 1, 5, and 6.

8. Analytical Work of the Rolling-Mill and Mine-Laboratory. Lecture, *once a week*; laboratory work, *daily.* *Five-fifths Course.* Mr. BROWNE.

Course 8 is open to those who have taken Course 5; but it is designed as a practical course and should not be elected unless every afternoon can be devoted to laboratory work.

9. Advanced General Quantitative Analysis. Lecture, *once a week*; laboratory work, *daily.* *Five-fifths Course.* Mr. BROWNE.

Course 9 is open to those who have taken Course 5.

10. Blow-pipe Analysis. Lectures and laboratory work. *Daily for six weeks.* *Two-fifths Course.* Mr. BROWNE.

Course 10 must be preceded by Course 1 or Course 3, and must be preceded or accompanied by a Course in Mineralogy.

11. Original Investigation. Laboratory work and reading. *Five-fifths Course.* 11a. Continuation of Course 11, and of the same extent.

Courses 11 and 11a are conducted by different instructors, according to the nature of the investigations, but students wishing to take them must first make application to Professor PRESCOTT. They must be preceded by Courses 1 and 5, and by such other studies as the investigations shall require.

12. Assaying Ores, dry way. Lectures and laboratory work. *Daily for six weeks.* *Two-fifths Course.* Mr. BROWNE.

Course 12 must be preceded by Course 1 or Course 3.

16. Analytical Work of the Rolling-Mill and Mine-Laboratory, con-

tinuation of Course 8. Lecture, *once a week*; laboratory work, *daily*. *Five-fifths Course*. Mr. BROWNE.

SECOND SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F, 8¼-9¼*; laboratory work, *daily*. *Ten-fifths Course*. Assistant Professor JOHNSON.
2. Advanced Qualitative Analysis, continuation of Course 1, *until the last of March*. Recitations, *M, Tu, W, Th, F, 9½-10½*; laboratory work, *daily*. *Four-fifths Course*. Assistant Professor JOHNSON.
3. Qualitative Analysis. Recitations, *Tu, Th, 2-3*; laboratory work, *three times a week*. *Five-fifths Course*. Assistant Professor JOHNSON.
13. Manufacture and Purification of Chemicals. *From the last Monday in March to the end of the year*. Recitation, *once a week*; laboratory work, *daily*. *Four-fifths Course*. Assistant Professor JOHNSON.
Course 13 is open to those who have completed Courses 1 and 2.
14. Outlines of Chemical Technology. Lectures. *One-fifth Course*. Assistant Professor JOHNSON.
Course 14 is open to those who have taken Course 1 or Course 3.
15. Proximate Organic Analysis, including Toxicology. Laboratory work. *Five-fifths Course*. Professor PRESCOTT.
Course 15 is open to those who have taken Courses 1 or 3, and 5 or 6.

HYGIENE AND PHYSIOLOGICAL CHEMISTRY.

FIRST SEMESTER.

1. Sanitary Science. Lectures. *Tu, Th, 10½-11½*. Professor VAUGHAN.

EITHER FIRST OR SECOND SEMESTER.

2. Physiological Chemistry. Lectures, *twice a week*; laboratory work, *daily*. *Seven-fifths Course*. 2a. Continuation of Course 2, and of the same extent. Mr. NOVY.
Course 2 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.
3. Sanitary Examinations. Lectures, *twice a week*; laboratory work, *daily*. *Seven-fifths Course*. 3a. Continuation of Course 3 and of the same extent. Mr. NOVY.
Course 3 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.
4. Original Research on the Causation of Disease, including a Course in Bacteriology. Laboratory work and reading. *Five-fifths Course*. 4a. Continuation of Course 4, and of the same extent. Professor VAUGHAN.

Course 4 is designed for advanced students, and is open only to such as receive special permission from the instructor in charge.

ASTRONOMY.

The Courses in Astronomy and Meteorology should be pursued in the following order: Courses 2 and 8; Course 5; Course 9 or Course 3; Courses 1 and 4 with 10.

FIRST SEMESTER.

1. Theoretical Astronomy. *M, Tu, W, Th, F, 4-5.* Professor HARRINGTON.
Course 1 should be preceded by Course 11 in Mathematics.
5. Modern Meteorology. *Tu, F, 5-6.* Professor HARRINGTON.
Course 5 must be preceded by an elementary Course in Physics.

EITHER FIRST OR SECOND SEMESTER.

3. Spherical and Practical Astronomy (for students in Civil Engineering). *Two-fifths Course.* Mr. W. W. CAMPBELL.
Course 3 must be preceded by Courses 2, 3, and 6 in Mathematics.
8. Elementary Practical Course. *One-fifth Course.* Mr. W. W. CAMPBELL.
9. Course for Time, Latitude, and Longitude. *One-fifth Course.* Mr. W. W. CAMPBELL.
10. Advanced Practical Course. *One-fifth Course.* Mr. W. W. CAMPBELL.
For Courses 8, 9, and 10, a general knowledge of Astronomy and Trigonometry is requisite.

SECOND SEMESTER.

2. General Astronomy. *M, W, F, 4-5.* Professor HARRINGTON.
Course 2 requires a knowledge of Trigonometry.
4. Theoretical Astronomy. *M, Tu, W, Th, F, 5-6.* Professor HARRINGTON.
Course 4 should be preceded by Course 11 in Mathematics.

MINERALOGY.

FIRST SEMESTER.

1. Short Course. Lectures and practice. Lectures, *M, F, Sec. I., 9½-10½; Sec. II., 10½-11½;* practice, in small sections, *twice a week.* *Two-fifths Course.* Professor PETTEE.
For Course 1 an elementary knowledge of Chemistry is desirable.
3. Advanced Course. *Tu, Th, F, 5-6.* Professor PETTEE.
Course 3 must be preceded by Course 1 or by Course 2.

SECOND SEMESTER.

2. Mineralogy and Lithology. Lectures and practice. *M, Tu, W, Th, F, 8¼-10½.* *Five-fifths Course.* Professor PETTEE.
Course 2 can be taken only by those who are taking, or have taken, a Course in Analytical Chemistry.

GEOLOGY.

Course 3 or Course 5 may be taken as an advanced Course by students who have passed an entrance examination in Geology.

FIRST SEMESTER.

1. Elements of General Geology. The Earth's surface and the constitution of its crust. Erosion, sedimentation, change of level, mountain-making, geological dynamics, the history of life and the grand succession of geological events. Part I. Facts and Doctrines. *M, W, 3-4.* Professor WINCHELL.

See note to Course 2.

2. Oral Exercises. Supplementary to Course 1, and parallel with it; being a review with exercises on the geological map, and in various specific geological problems. *F, 3-4.* Professor WINCHELL.

Course 2 is intended to accompany Course 1; it may be taken, however, by any person already acquainted with the elements of Geology. Beginners in Geology must take both Courses. Students reviewing the subject by taking either Course 1 or Course 2 without the other, are held to the same examinations as those taking both Courses together.

3. Advanced Geology and Palæontology. Lectures, reading, and museum study. *Tu, Th, 3-4.* Professor WINCHELL.

Course 3 is designed for students who have taken Courses 1 and 2, or who enter the University with thorough preparation in the elements of Geology.

4. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week, 2-4.* Professor WINCHELL.

Courses 4 and 7 are designed for students aspiring to proficiency in Geology; they must be preceded by Courses 1 and 2 in Geology and also by Course 1 in Zoology.

5. Economic Geology. *M, W, 5-6.* Professor PETTEE.

Course 8 must be preceded by Course 2 in Mineralogy.

9. Geology of the United States. *Tu, Th, 4-5.* Professor PETTEE.

Course 9 is designed especially to meet the wants of students in Engineering.

SECOND SEMESTER.

5. Elements of General Geology. Part II. Theories. *M, 3-4.* Professor WINCHELL.

Course 5 can be taken only by those who have had Courses 1 and 2, or an equivalent. See note to Course 6.

6. Oral exercises, parallel with Course 5. *F, 3-4.* Professor WINCHELL.

Course 6 is intended to accompany Course 5. Students taking either Course 5 or Course 6 without the other are held to the same examinations as those taking both Courses together.

7. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week, 2-4.* Professor WINCHELL.
See note to Course 4 in first semester.
9. Geology of the United States. *Tu, Th, 4-5.* Professor PETTEE.
See note to Course 9 in first semester.
10. Teachers' Course in the Elements of Geology. *Tu, Th, 3-4.* Professor WINCHELL.

GENERAL BIOLOGY.

FIRST SEMESTER.

1. Elements of Biology. A study of typical species of plants and animals, with reference to structure, development, and relationship. Lectures, *M, W, 8¼-9¼*; laboratory work, *forenoons.* *Five-fifths Course.* Professor SPALDING and Mr. REIGHARD.

SECOND SEMESTER.

2. Elements of Biology, continuation of Course 1. Lectures, *M, W, 8¼-9¼*; laboratory work in the botanical laboratory, *forenoons*; in the zoological laboratory, *afternoons.* *Five-fifths Course.* Professor SPALDING and Mr. REIGHARD.
Course 2 must be preceded by Course 1.

ZOOLOGY.

FIRST SEMESTER.

1. Systematic Zoology (introductory). Lectures, *M, Tu, W, Th, F, 8¼-9¼.* Professor STEERE.
6. Comparative Anatomy of Vertebrates. Recitations, *W, F, 8¼-9¼*; laboratory work, *forenoons.* *Five-fifths Course.* Mr. REIGHARD.
Course 6 must be preceded by Courses 1 and 2 in General Biology, or an equivalent.
- 8a. Ornithology (advanced). Laboratory work. *Five-fifths Course.* Professor STEERE.
Course 8a must be preceded by Courses 1 and 4, or an equivalent.

SECOND SEMESTER.

4. Identification and special study of North American Vertebrates. Lectures and laboratory work. Lectures, *Tu, Th, 8¼-9¼*; laboratory work, *M, W, F, forenoons.* *Five-fifths Course.* Professor STEERE.
Course 4 must be preceded by Course 1 or an equivalent.
- 8b. Ornithology, continuation of Course 8a. Laboratory work. *Five-fifths Course.* Professor STEERE.
10. Embryology. Laboratory work, lectures, and recitations. Recita-

tions, *W, F, 2-3*; laboratory work, *afternoons. Five-fifths Course.*

Mr. REIGHARD.

Course 10 must be preceded by Course 6.

BOTANY.

FIRST SEMESTER.

1. Cryptogamic Botany. Lecture, *F, 8¼-9¼*; laboratory work, *forenoons. Three-fifths Course.* Professor SPALDING.
 2. Structural and Pharmaceutical Botany. Lecture, *F, 9½-10½*; laboratory work, *M, Tu, W, Th, forenoons. Five-fifths Course.* Mrs. STOWELL.*
 - 2a. Advanced Course. Microscopical Detection of Adulterations in Foods and Spices. *Two-fifths Course.* Mrs. STOWELL.*
 4. Physiological Botany. Lecture or recitation, *W, 8¼-9¼*; laboratory work, *forenoons. Five-fifths Course.* Professor SPALDING.
- Course 4 must be preceded by Courses 1 and 2 in General Biology.

SECOND SEMESTER.

3. Structural Botany and Microscopy. Lecture, *F, 10½-11½*; laboratory work, *M, Tu, W, Th, forenoons. Five-fifths Course.* Mrs. STOWELL.
 - 3a. Advanced Structural Botany and Microscopy. Laboratory work and reading. *Five-fifths Course.* Mrs. STOWELL.
 - 3b. Comparative Vegetable Histology. Laboratory work. *Five-fifths Course.* Mrs. STOWELL.
- Course 3a must be preceded by Course 2 or Course 3.
- Course 3b must be preceded by Course 3.
5. Cryptogamic Botany. Advanced Course. Study of Fungi. *Five-fifths Course.* Professor SPALDING.
 6. Advanced Course. Morphology and Physiology of Phanerogams. a. *Three-fifths Course.* b. *Two-fifths Course.* Professor SPALDING.
- Course 5 must be preceded by Course 1.
- Course 6 must be preceded by Course 1, or by Course 1 in General Biology.

PHYSIOLOGY.

Professor SEWALL has leave of absence for the year, and the Courses in Physiology are omitted with the exception of one in laboratory work.

FIRST SEMESTER.

3. Laboratory work. *Three times a week, afternoons.* Mr. SANFORD.

* Owing to the illness of Mrs. STOWELL Courses 2 and 2a are conducted by Mr. VAN SLYKE.

DRAWING.

FIRST SEMESTER.

1. Geometrical Drawing. *M, W, 2-4.* Assistant Professor DAVIS.
2. Topographical Drawing, Lettering, and Ornamentation. *Tu, Th, 9½-11½.* Professor DENISON.
3. Mechanical Drawing. *Tu, Th, F, 2-4.* Assistant Professor DAVIS.
4. Free-hand Drawing; Sketching; Pen and Ink Drawing. *M, W, F, 9½-12½.* Professor DENISON.
9. Sketching of parts of machines. Lettering. *M, W, F, 9½-12½.* Professor DENISON.

Course 9 is designed especially for students in Mechanical Engineering.

10. Continuation of Course 8. *Two-fifths Course.* Professor DENISON.
13. Water-Color Drawing. *Three-fifths Course.* Professor DENISON.

Course 13 must be preceded by Course 8.

SECOND SEMESTER.

5. Descriptive Geometry. *M, W, F, 8¼-10½.* Assistant Professor DAVIS and Professor DENISON.

Course 5 must be preceded by Course 1.

6. Shades, Shadows, and Perspective. *M, W, F, 9½-12½.* Professor DENISON.

Course 6 must be preceded by Course 5.

7. Free-hand Drawing (advanced). *M, W, F, 10½-12½.* Professor DENISON.
8. Architectural and Water-Color Drawing. *Tu, Th, 9½-11½.* Professor DENISON.

SURVEYING.

FIRST SEMESTER.

1. Surveying; Use of Transit and Level. *M, W, F, 8¼-12½.* Assistant Professor DAVIS.
 2. Surveying with Compass; Solar Compass; U. S. Surveys. *Tu, Th, 8¼-12½.* Assistant Professor DAVIS.
- Courses 1 and 2 presuppose a knowledge of Plane Trigonometry.
5. Use of Instruments. *One-fifth Course.* Assistant Professor DAVIS.
- Course 5 is designed especially for students in Mechanical Engineering.

SECOND SEMESTER.

3. Higher Surveying; Plane Table; Sextant; Earth-work. *M, Tu, W, Th, F, 2-6.* *Five-fifths Course.* Assistant Professor DAVIS.
- Course 3 must be preceded by Courses 1 and 2.
4. Field work. *Four weeks entire, 8-12 and 1-5.* Assistant Professor DAVIS.

Course 4 is open only to students that are, or are intending to become, candidates for a degree for a course in Engineering.

6. Theory of Economical Railway Location. *W*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor GREENE.

CIVIL ENGINEERING.

FIRST SEMESTER.

1. Strength and Resistance of Materials. *M, W*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor GREENE.

Course 1 must be preceded by Course 11 in Mathematics.

2. Engineering; Theory of Construction. *F*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor GREENE.

Course 2 must be preceded by Course 11 in Mathematics.

- 3a. Graphical Analysis of Structures. *Tu, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor GREENE.

Course 3a requires at least a limited knowledge of Statics and must be preceded by Course 3.

4. Engineering Design. *Daily, three hours a day. Five-fifths Course.* Professor GREENE.

Course 4 accompanies Courses 1 and 2.

5. Mechanism and Machine Drawing. *Tu, Th*, $9\frac{1}{2}$ - $11\frac{1}{2}$. Professor DENISON.

SECOND SEMESTER.

3. Graphical Analysis of Structures. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor GREENE.

7. Dynamics of Machinery. *First half of semester. Tu, Th*, $11\frac{1}{2}$ - $12\frac{1}{2}$. *One-fifth Course.* Professor M. E. COOLEY.

Course 7 is the same as the first half of Course 6 in Mechanical Engineering.

8. Engineering; Theory of Construction. *M, Tu, Th, F*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor GREENE.

9. Hydraulics; Water Supply and Sewerage. *W*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor GREENE.

10. Stereotomy. *Tu, Th*, $9\frac{1}{2}$ - $11\frac{1}{2}$. Professor DENISON.

Course 10 must be preceded by Course 5 in Drawing.

MECHANICAL ENGINEERING.

In the Courses in Shop Practice, Mr. TAYLOR is assisted in the iron work by Mr. Smoots, in the foundry work by Mr. Winslow, and in the wood work by Mr. Purfield.

FIRST SEMESTER.

2. Shop Practice in Forging. *Tu, Th, two hours each day, forenoon or afternoon. Two-fifths Course.* Mr. TAYLOR.

5. Mechanism and Machine Drawing. *Three-fifths Course*. Professor DENISON.

Course 5 must be preceded by Course 5 or 5a in Mathematics, and by Courses 1 and 5 in Drawing.

7. Prime Movers; Water Wheels and Steam Engines. *Tu, Th, 10½-11½*. Professor M. E. COOLEY.

Course 7 must be preceded by Course 6.

- 7a. Thermodynamics; Hot-Air and Gas Engines, Air Compressors and Refrigerating Machines. *Two-fifths Course*. Professor M. E. COOLEY.

Course 7a must be preceded by Course 6.

8. Theory of Machine Construction. *F, 11½-12½*. Professor M. E. COOLEY.

Course 8 should be accompanied by Course 1 in Civil Engineering.

9. Machine Design. *Daily, three hours a day. Five-fifths Course*. Professor M. E. COOLEY.

Course 9 should be accompanied by Course 8.

13. Naval Architecture. *M, W, F, 5-6*. Professor M. E. COOLEY.

Course 13 is an advanced Course, open only to those who receive special permission.

EITHER FIRST OR SECOND SEMESTER.

1. Shop Practice in Wood Work and in Pattern Work. 1a. Continuation of the same for advanced students. *M, W, F, 9½-12½*. *Three-fifths Course*. Mr. TAYLOR.

In the first semester the work in Course 1 is arranged especially for students in Mechanical Engineering; in the second semester for students in Civil Engineering.

4. Shop Practice in Iron Work. 4a. Continuation of the same for advanced students. *M, W, F, three hours a day, between 2 and 6*. *Three-fifths Course*. Mr. TAYLOR.

SECOND SEMESTER.

3. Machinery and Machine Drawing. *Tu, Th, 8¼-10¼*. Mr. TAYLOR.
- Course 3 must be preceded by Courses 1 and 9 in Drawing.

6. Dynamics of Machinery. *Tu, Th, 11½-12½*. Professor M. E. COOLEY.

Course 6 must be preceded by Course 11 in Mathematics, and by Course 10 in Physics.

10. Machine Construction and Mill Work. *M, Tu, Th, F, 9½-11½*. Professor M. E. COOLEY.

Course 10 must be preceded by Course 9.

11. Steam Engineering; Steam Generators; Steam Pumping and Hoisting Machinery; Practical work in the laboratory. *M, W, F, 2-5*. *Three-fifths Course*. Professor M. E. COOLEY.

Course 11 must be preceded by Courses 7 and 7a.

12. Shop Practice in Foundry Work. *Tu, Th, three hours each day, between 2 and 6. Two-fifths Course.* Mr. TAYLOR.
- 13a. Continuation of Course 13. *Two-fifths Course.* Professor M. E. COOLEY.
14. Marine Engineering. *Three-fifths Course.* Professor M. E. COOLEY.
Course 14 must be preceded by Course 7.

MINING ENGINEERING.

SECOND SEMESTER.

1. Mining. *Five-fifths Course.* Professor PETTEE.

Course 1 is open only to those who are candidates for the degree of Bachelor of Science for a course in Mining Engineering.

METALLURGY.

FIRST SEMESTER.

1. Fuel and Refractory Material, Iron, Steel, Copper, and Zinc. *Three-fifths Course.* Mr. WHYTE.

Course 1 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

SECOND SEMESTER.

2. Lead, Silver, Gold, Mercury, and other metals. *Two-fifths Course.* Mr. WHYTE.

Course 2 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

MUSIC.

FIRST SEMESTER.

- 1a. Science and Practice of Choral Music. *Tu, Th, F, 5-6. Two-fifths Course.* Professor STANLEY.

No previous knowledge of Music is required for admission to Course 1a; but those wishing to take the Course *must first satisfy the instructor that they can do so with profit.*

- 2a. Science of Harmony. *Tu, F, Sec. I., 9½-10½; Sec. II., 10½-11½; Sec. III., 11½-12½.* Professor STANLEY.

Course 2a must be preceded by Course 1b, or its equivalent; and sufficient technical ability to play a common hymn tune on the piano or organ is also required.

- 3a. Simple Counterpoint. *M, Th, 9½-10½.* Professor STANLEY.

Course 3a must be preceded by Course 2b.

- 4a. Imitation. Canon. Choral Vorspiel. Professor STANLEY.

Course 4a must be preceded by Course 3b.

SECOND SEMESTER.

- 1b. Science and Practice of Choral Music, continuation of Course 1a.

Tu, Th, F, 5-6. Two-fifths Course. Professor STANLEY.

68 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

- 2b. Science of Harmony, continuation of Course 2a. *Tu, F, 9½-10¼.*
Professor STANLEY.
- 3b. Double Counterpoint. *M, Th, 9½-10½.* Professor STANLEY.
Course 3b must be preceded by Course 3a.
- 4b. Fugue. Musical Form. Professor STANLEY.
Course 4b must be preceded by Course 4a.

BIBLIOGRAPHY.

FIRST SEMESTER.

Lectures designed to aid readers in the use of the library, and in gaining a knowledge of recent books. *M, 7-8 P. M., during the month of October.* Mr. R. C. DAVIS.

Attendance upon these lectures is not counted as meeting the requirements for a degree.

SECOND SEMESTER.

1. Historical, Material, and Intellectual Bibliography. Lectures. *W, 3-4.* Mr. R. C. DAVIS.

REQUIREMENTS FOR GRADUATION.

THE BACHELORS' DEGREES.

[For the Higher Degrees, see page 73].

The degree of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science, or Bachelor of Letters may be earned either on the credit system, or on the university system. A description of the latter is given on page 71. The requirements for graduation on the credit system are as follows:

GRADUATION ON THE CREDIT SYSTEM.

Under the credit system, the Faculty recommend for graduation students who have completed a stated number of *Full Courses* of study, according to the requirements specified below,—a part being prescribed and a part being chosen by the student. A *Full Course* of study comprises five exercises a week during a semester, whether in recitations, laboratory work, or lectures. It is not essential that the exercises constituting a *Full Course* shall be in one and the same branch of study. Thus, a part (two for instance, a *two-fifths Course*,) may be in Mathematics, a part (say two) in Greek, and a part (say one, a *one-fifth Course*,) in Latin, making a total of five.

The Degree of Bachelor of Arts.

To obtain the recommendation of the Faculty for the degree of Bachelor of Arts, the student must complete *twenty-four Full Courses*. The prescribed portion of this work is as follows:

In Greek; Courses 1, 3, 6, 13, and a four-fifths Course in tragedy.

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 1, 2, 5a, 6. *

In French; Courses 1, 5.

In English; Courses 1, 2.

In Philosophy; Course 1 or Course 3.

But after a student has completed Courses 1, 6, and 13 in Greek, 1 and 6 in Latin, and 1 and 5a, or an equivalent, in Mathematics, he may, at his option, discontinue the study of any one of these three subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-four Full Courses*.

The Degree of Bachelor of Philosophy.

To obtain the recommendation of the Faculty for the degree of Bachelor of Philosophy, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Latin; Courses 1, 2, 6, 8.

In Mathematics; Courses 1, 2, 5a, 6. *

In French;—(a), for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 5;

or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German;—(a), for those who entered *without* German, three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4 (see page 47);

or (b), for those who entered *with* German, one and three-fifths Full Courses, taken from options in Courses 3, 4.

In English; Courses 1, 2.

In Philosophy; Course 1 or Course 3.

But after a student has completed Courses 1 and 6 in Latin, 1 and 5a, or an equivalent, in Mathematics, and one and three-fifths Full Courses in German (if he entered *without* German) or

* Instead of these Courses the student is permitted to take other Courses in thematics of equivalent amount.

Courses 1 and 5 in French (if he entered without French), he may, at his option, discontinue the study of Latin, of Mathematics, or of the modern language (French or German) which he began in the University. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in General Science).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for the course in General Science, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

- In Mathematics; Courses 1, 5a, or an equivalent.
- In French; (a), for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 5;
or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.
- In German; (a), for those who entered *without* German, Course 1 and one of the options in Course 2 (see page 47);
or (b), for those who entered *with* German, one and three-fifths Full Courses, taken from the options in Courses 3, 4.
- In English; Courses 1, 2.
- In Philosophy; Course 1 or Course 3.
- In Physics; Course 10.
- In General Chemistry; Course 2.
- In Zoology, in Botany, or in General Biology; one Full Course.
- In Physical Sciences or in Biological Sciences; five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in Chemistry).

The requirements for the degree to be given on completion of the course in Chemistry may be found on page 87.

The Degree of Bachelor of Science (in Biology).

The requirements for the degree to be given on completion of the course in Biology may be found on page 89.

The Degree of Bachelor of Science (in Civil, Mechanical, or Mining Engineering).

The requirements for the degree to be given on completion of a course in Engineering may be found on pages 84 to 86.

The Degree of Bachelor of Letters.

To obtain the recommendation of the Faculty for the degree of Bachelor of Letters, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Course 5a.

In French; three and one-fifth Full Courses, including Courses 1, 5.

In German; three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4.

In English; Courses 1, 2, 4, 9.

In History; One and two-fifths Full Courses, including Courses 1, 7.

In Philosophy; Course 1 or Course 3.

But after a student has completed Courses 1 and 5 in French and one and three-fifths Full Courses in German, he may, at his option, discontinue either of these two subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

GRADUATION ON THE UNIVERSITY SYSTEM.

Admission of Undergraduates.

1. The privileges of the university system are open to undergraduates who have completed their second year of residence, and have also completed at least twelve Full Courses, including all the prescribed work—offered in the first two years—for some one of the Bachelors' degrees.

Conditions for Entering Upon the Work.

2. Before beginning his work each undergraduate student must make application to the Registrar, and receive from him a certificate that he is entitled to enter upon the work. This application must be made before the student enters on the work of his third year of collegiate residence. In cases of exceptional

character, however, the Faculty may grant permission to begin work on the university system at a later date.

Nature of the Work.

3. Students who are working on the university system are not held to the completion of a fixed number of Courses, but will be required to pursue three distinct lines of study, one "major study" and two "minor studies," and, at the close of the work, to pass a special examination on those studies. The committee in charge of any undergraduate's work may, however, at their option, accept in lieu of the final examination in a minor study, approved work, in the line of that study or germane to it, done on the credit system, equivalent to one-fourth of the amount of work the student would have been obliged to complete before graduation, if he had continued on the credit system.

Supervision of the Work.

4. The work of students carrying on their studies under the university system will be supervised by committees of the Faculty. To carry this provision into effect, ten members of the Faculty have been chosen as chairmen of such committees. The other members of the committee in each case consist of the instructors in charge of the student's work. On making his application to the Registrar, each student will be directed to the chairman of the proper committee.

Attendance.

5. Students on the university system are subject to all the rules of this Department relating to attendance and to examinations. No student can be excused from any work that he has once entered upon, nor from any examination, without the consent of the instructor in charge of the work. Examinations passed at the close of each semester on ordinary class work shall not count as an equivalent or in abatement of the final examination to be passed for a degree, except as provided above in paragraph 3.

Bachelors' Degrees.

6. Undergraduates who have been enrolled as candidates

under the university system for at least three semesters, may be admitted to a special examination for a Bachelor's degree at a date not earlier than the end of three and a half years of residence at the University. The examination will be conducted by the regular committee and such other persons as they may ask to assist them. Before being recommended for any Bachelor's degree, however, they must have completed all the Courses prescribed for that degree.

THE HIGHER DEGREES.

Candidates for Higher Degrees will pursue their studies on the university system, described above. But for the Master's degree a course of study may at the discretion of the Faculty be approved, which does not confine the work rigorously to one major and two minor studies.

THE MASTERS' DEGREES.

The Masters' degrees are open to Bachelors of this University, or of any other reputable university or college; a residence of at least one year at the University is required, except as stated below.

1. *Residents*.—Those who have received a Bachelor's degree at this University, or at any other reputable university or college, may be recommended for the corresponding Master's degree after a year's residence at the University, provided they pass examination on an approved course of study (see paragraph 3 on page 72), and present a satisfactory thesis.

N. B. Students properly qualified may be permitted to pursue at the same time studies for a Master's degree, and studies in any of the professional schools, on condition that the term of study and residence in this Department be extended to cover two years instead of one.

2. *Non-Residents*.—A Bachelor of Arts, Bachelor of Science, Bachelor of Philosophy, or Bachelor of Letters, of this University, who has not resided here since graduation, may be recommended for the corresponding Master's degree, provided he spends at least two years on a course of study approved by the

Faculty, passes the required examinations, and presents a satisfactory thesis. *This privilege is restricted to graduates of this University.*

THE DOCTORS' DEGREES.

1. The Doctors' degrees shall be conferred only on persons who have previously received a Bachelor's degree, either here or at some other reputable university or college, and also during residence here have made special proficiency in some one branch of study, and good attainments in two other branches, and have presented a thesis that shall evince the power of research and of independent investigation. It is not intended that the Doctors' degrees shall be won merely by faithful and industrious work for a prescribed time in some assigned course of study, and no definite term of required residence can be specified; but it is the practice of the University to require at least one full year of residence of candidates that have already earned a Master's degree, and at least two full years of candidates that have previously taken only a Bachelor's degree.

2. The degree of Doctor of Philosophy shall be open to persons that have received the degree of Bachelor of Arts, or of Bachelor of Philosophy; the degree of Doctor of Science to persons that have received the degree of Bachelor of Science; and the degree of Doctor of Letters to persons that have received the degree of Bachelor of Letters.

THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The requirements for these degrees may be found on page 86.

SPECIAL REGULATIONS RELATING TO THE HIGHER DEGREES.

1. Applicants for an advanced degree, whether resident or non-resident, are required to announce to the Faculty, through the President, as early as the fifteenth of October of each year, the particular branches of study to which they wish to give special attention. The supervision of their work will then be entrusted to the proper committee.

2. The subject of the thesis must be announced to the

President as early as the first of December of the college year in which the applicant expects to take the degree.

3. It is required in the case of a resident applicant that, so far as the resources of the University permit, the thesis be upon a subject requiring research. The thesis of a non-resident applicant must also be upon a subject requiring independent research, if possible.

4. The thesis must be completed and put into the hands of the chairman of the proper committee as early as the first of May of the year in which the applicant expects to take the degree.

5. The thesis must be prepared for close scrutiny with reference not only to its technical merits, but also to its merits as a specimen of literary workmanship. It must be preceded by an Analytical Table of Contents, and a carefully prepared account of the authorities made use of.

6. The thesis must be read and defended in public at such time as the Faculty may appoint; and, in case of a Master's degree, a bound copy, either written or printed, must be deposited in the University library.

7. Candidates for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Letters, in case of the acceptance of their theses, are also required to have the accepted theses printed, and to present twenty-five copies of the same to the library of the University, unless by special vote of the Faculty a smaller number is deemed sufficient.

FURTHER DESCRIPTION OF COURSES IN TECHNOLOGICAL AND PROFESSIONAL STUDIES.

Although the University has no School of Technology, as a separate organization, instruction is given in the branches pursued in such a school. Accordingly, fuller statements than are given above concerning the technological courses, are here added; and also statements of special interest to those who desire to pursue extended studies in the physical and biological sciences, in chemistry, and in geology, or to prepare themselves for the

profession of teaching. The pharmaceutical courses are described in the chapter on the School of Pharmacy.

I. ENGINEERING.

The University offers to persons that wish to become professional engineers, thorough courses of study extending over about four years. In these courses of study, the aim of the University is to lay a foundation of sound theory, sufficiently broad and deep to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession; and at the same time to impart such a knowledge of the usual professional practice, as shall make its students useful in any position to which they may be called. While the adaptation of theory to practice can be thoroughly learned only by experience, there are many matters in which the routine work of an engineering field party, office, or drafting room can be carried out on a greater or less scale in a training school.

In *Civil Engineering* all the technical branches are under the direct care of those who have had professional experience as well as a full scientific training, and in all particulars the course embodies as close an imitation of the requirements of active labor as the instructors who have the several branches in charge can devise.

In *Mechanical Engineering* the course of study, though to some extent parallel with that in civil engineering, includes a wide range of special studies. Prominence is given to the study of steam engineering, and in this branch a large amount of practical work is done. The instruction is arranged to accommodate those who wish to devote their time principally to mechanical engineering proper, to steam engineering, or to marine engineering and naval architecture.

In *Mining Engineering and Metallurgy* the course of instruction, which is intended to cover about four years of study, includes a part of that provided for students in civil and in mechanical engineering, though more especial attention is paid in the latter part of the course to mineralogy, geology, and chemistry. The instruction in the technical branches is arranged so as to meet the wants, both of those whose purpose it is to confine

their professional work more closely to metallurgy, and of those who intend to engage in the practice of mining and metallurgy combined.

REQUIREMENTS FOR ADMISSION.

Candidates for a degree in any of the courses in engineering must pass examination for admission as follows:

1. ENGLISH LANGUAGE, GEOGRAPHY, AND MATHEMATICS.—In all, the same as for the degree of Bachelor of Arts (see page 32).

[In 1890, and thereafter, the modified requirement in *Algebra* will be in force.]

2. HISTORY, AND NATURAL PHILOSOPHY.—In both, the same as for the Course in General Science (see page 35).

3. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 37).

4. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—In any two of these subjects (see page 36).

Students not candidates for a degree may be admitted to pursue such studies as they prefer, provided they are found prepared to join the classes in these studies. They will be expected to attend all the lectures, recitations, and examinations in the branches prescribed for the regular students, and will be required to take enough work to occupy them profitably.

COURSES OF INSTRUCTION.

The studies pursued in the earlier part of the course, common to all students in engineering, comprise, in *Mathematics*, algebra, geometry, plane and spherical trigonometry, analytic geometry, and the elements of differential and integral calculus; in *French and German*, an amount covering in all about two years of study; in *English*, a course in higher English grammar and composition; in *Physics and General Chemistry*, the study of the elementary principles; and in *Drawing*, practice in geometrical and in mechanical drawing, and in the study of descriptive geometry.

The more technical subjects are taken up in the latter part of the course. Some of these subjects are of equal value to all classes of engineering students, such as analytic and applied mechanics, the strength and resistance of materials, and the metallurgy of the useful metals, especially iron and steel; others

are adapted more particularly to the wants of the special students in the several courses. Their general scope may be seen from the following descriptive outline.

1. *Drawing*.—A very complete course in mechanical drawing is given, embracing plane projection drawing, isometric drawing, descriptive geometry, and the elementary principles of coloring and shading, with original problems executed in the drawing room. Examples from numerical data are always given in all branches, and copying from the flat is avoided. Students of mechanical engineering are required to sketch pieces of machinery, and afterwards to make working drawings suitable for use in the shop. Problems peculiar to mining practice are also given. The plans of surveys, plane-table work, maps, designs in engineering construction, and the thesis drawings naturally come under this head. Instruction is also given in free-hand drawing, topographical drawing, ornamentation and lettering, shades and shadows, linear perspective, and drawing for stone cutting. The work in drawing occupies the student a part of almost every day throughout the course.

2. *Surveying*.—The work in surveying combines theory and practice. A course of lectures and text-book work, in daily exercises, covers so much of one year as is not given to field work; the theory of instruments, and all the operations of surveying, laying out work, and computing, are explained in detail. Every student is afforded abundant opportunity for becoming familiar, by actual use, with the excellent and full assortment of instruments owned by the University, embracing those usually employed in actual work, and numbering enough to equip well the parties. The classes in surveying are drilled in all the field-work that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide areas, and solve problems in heights and distances from data taken by themselves. They also determine the meridian, and take observations for latitude. This work is done during the fall months; the finished plans of the surveys are made during the winter.

The classes in railroad engineering have practice in running levels and curves of different kinds, and in the measurement of earth-work. In the month of June they are taken into the field

as a railroad party, for a space of four weeks continuously, where, under competent supervision, they go through all the field work for a projected line; doing all the work up to the point of actual construction, such as reconnoissance, preliminary and location survey, cross-sectioning, staking out, contouring, and topography. A plan and profile, carefully made in the field by the students from the notes of the party, complete this portion of the subject, and serve to fix the practical application of the principles obtained from the text-books and lectures. In the above work are usually included a plane-table survey, triangulation, and some hydrography when the selected locality is favorable.

The principal text-books used in this work are Johnson's Surveying, Searle's Field-Book for Engineers, and Rankine's Civil Engineering.

3. *Strength and Resistance of Materials.*—A course of recitations and lectures continuing through the first half year is devoted to this subject, and is attended by all the engineering students. The action of the different materials under applied forces, the distribution of stress, and the proper proportions to be given to the different parts of structures in order that they may safely fulfil their several functions, are carefully studied.

4. *Theory of Structures.*—Roof and bridge trusses, in wood and iron, arches, in wood, iron, and stone, trestles, brick and stone masonry, foundations, tunnels, and, in general, the whole theory of structures are discussed. In this course, as in the preceding (3), Rankine's Civil Engineering is used as a text-book supplemented by full explanations, additional notes, lectures, examples, and problems.

A complete course of instruction is also given in the graphical analysis of roof and bridge trusses and arches, as recently developed and applied. The student is made familiar with both the analytical and graphical methods of treatment, and thus possesses ready proof of the accuracy of his calculations.

5. *Hydraulics.*—The law of the flow of water through orifices and pipes and over weirs, the gauging of streams and rivers, the designing of works for water supply, drainage and

sewerage, the laying out of canals, and the subjects of river and harbor improvements are treated in this course.

6. *Machinery, Prime Movers, and Millwork.*—A course of instruction is given in mechanism, or the general principles of machinery, involving the study of gearing, screws, cranks, and levers, and the dynamics of machinery. In the study of prime movers, special attention is given to turbine and other water motors, and to steam engines. In the theory of machine construction, problems involving the strength and design of machines, and the materials used in their construction are studied at length, in connection with such examples as illustrate the best practice. The instruction in millwork covers the distribution of power and the arrangement of shafting and machinery in manufacturing establishments. Practical problems involving the strength of shafting, belting, and gearing, are fully treated. Tests are made to determine the efficiency of machines, and the value of lubricants.

7. *Designs in Engineering and in Machine Construction.*—Contemporaneously with the study of theory students are required to work out problems in design. They are furnished with the usual data for a design, and the kind or type of structure or machine is indicated. They are then expected to make the necessary calculations, paying particular attention to proportioning the different parts so as to secure strength, simplicity, and effect, and to present, at a specified date, complete working drawings, giving full details, accompanied by bills of materials, estimates, and specifications.

8. A course in *Thermodynamics* embraces the study of the principles governing the action of heat engines in general, hot-air and gas engines, air compressors, compressed-air engines, and refrigerating apparatus.

9. *Steam Engineering.*—The work in this branch covers the practical use of steam. Furnaces and boilers are studied with reference to proper combustion of fuel, to securing maximum evaporative efficiency, and to proportioning the parts for strength, durability, and accessibility for cleaning and repairs. The care and management of engines and boilers, both in use and out of use, are fully considered. A study is made of the principal steam

pumps and pumping engines. The practical application of steam to heating and ventilating purposes is treated by lectures, and by inspection of actual plants. Tests are made to determine the value of fuels, quality of steam, and the efficiency of furnaces, boilers, and engines.

10. *Laboratory Work.*—The laboratory work embraces experimental courses in the mechanical laboratory, and the practical courses in the various work-shops. Instruction is given in the principles governing the action of cutting tools and the principal machines and hand tools used in the shop. Lectures are given on pattern making, moulding, and founding, covering the principal features of each.

The *Shop Practice* covers the application of principles previously studied. It comprises the actual manipulation of the tools used in working metal and wood, and in moulding. The student is required to do work in pattern making, and moulding in green sand, in dry sand, and in loam, and will charge and have the management of the cupola and brass furnace during the operations of casting. Careful attention is given to the operations of founding and to making composition metals for specific purposes. The student is also required to put in practice, at the blacksmith's forge, his knowledge of the elementary principles of forging, and to forge and temper his own cutting tools. By working with iron and steel of different qualities the student becomes familiar with all grades of those materials. Practice is also afforded in soldering, brazing, and steam-fitting.

11. *Marine Engineering and Naval Architecture.*—The instruction in this branch comprises the study of marine steam engines and propelling instruments, the hydraulics of ship-building, buoyancy, metacentre, stability and trim, weight and centre of gravity, waves and rolling, structural strength, speed and resistance, propulsion by sails and steam engines, laying-off and taking-off, and other topics.

The principal text-books and books of reference used in the work in mechanical engineering are Holtzapfel's *Mechanical Manipulation*, Spretson's *Casting and Founding*, Rankine's *Steam Engine*, Goodeve's *Steam Engine*, Rankine's *Machinery and Millwork*, Zeuner's *Valve Gears*, Wilson's *Steam Boilers*,

Unwin's Elements of Machine Design, Goodeve's Elements of Mechanism, Thearle's Theoretical Naval Architecture, Seaton's Marine Engineering, Wood's Thermodynamics, Clerk's Gas Engines.

12. *Economic Geology*.—Particular attention is paid to the geology of mines and mineral districts, and to the modes of occurrence and distribution of mineral substances that have an economic or commercial importance.

13. *Mining*.—In this branch the instruction is given mainly by lectures. The machines in use at the best mines are described, and the mutual relations of parts explained and illustrated with the aid of plates and diagrams. The different operations connected with the discovery, opening, development, and working of mines are all studied in their proper order.

14. *Metallurgy*.—A complete course of instruction by lectures and recitations is given upon the subjects of fuel, refractory material, iron and steel, copper, zinc, lead, gold, silver, and other metals, extending over an entire year. The lectures are illustrated by charts and drawings of furnaces and appliances used, and by samples of furnace products. In connection with this course of study, the student is required to work out problems in heat, furnace construction, ore mixtures, blast-furnace slags, and blast engines, and to write out the chemical reactions that take place in the different metallurgical operations. Certain days are devoted to laboratory work, and the student is required to determine by actual tests the heating value of different fuels, to make tests of fire-proof material, and, from data and material furnished, to produce slags whose composition shall correspond to a given formula.

15. *Visits of Inspection*.—As often as may be practicable, visits are paid to the neighboring manufacturing establishments, for the purpose of acquiring a knowledge of the methods employed in building, and in the construction of bridges, machinery, and ships.

FACILITIES FOR INSTRUCTION.

The collections for illustrating the instruction given comprise models, drawings, photographs, lithographs, and blue prints,

representing trusses, arches, and details of construction in iron, wood, and stone; also shapes of iron, working models of turbines and engines, and working drawings of a number of bridges. These collections are receiving additions from year to year, by gift and purchase, and are invaluable to the student.

Tests of engines and boilers, and of machinery in general, will be made on request, and the profits of such work devoted to extending the facilities of the engineering laboratory. The data of all experiments and tests made are kept in the laboratory records.

All of the laboratory work is on a practical basis, and is done as nearly as possible as it would be done in any well arranged manufacturing establishment. There is also a large and convenient metallurgical laboratory connected with the chemical laboratory, amply supplied with assay furnaces and other appliances such as are usually found in laboratories of this description. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all; and frequent references are made to them in the class-room as the various subjects are brought forward.

EXAMINATIONS.

Examinations, usually in writing, are held at the end of each semester, but the classes are liable to be examined at any time, without notice, on any portion of their previous work.

REQUIREMENTS FOR GRADUATION.

Upon the completion of a prescribed course of study, amounting to twenty-five Full Courses,* as given below, and the presentation of a satisfactory thesis, the student receives the degree of Bachelor of Science. The diploma given indicates the line of study pursued.

Bachelors of Arts, of Philosophy, of Science, and of Letters, of this University, and graduates of any other reputable college, are recommended for the same degree with the regular students, after attendance on, and a satisfactory examination in,

*For explanation of the term Full Course, see page 68; and for further information in regard to the Courses prescribed for graduation see pages 42 to 68.

the technical subjects alone of the several courses. These studies can be completed in two years. The culture imparted by classical or other liberal training will be found to have its uses for one engaged in engineering work, and the previous discipline of the faculties in exact research will enable the professional student to master more easily the requirements of the course. All the time the student can devote to general studies before taking up specialties will be well spent.

The requirements for the several degrees are as follows :

1. *In Civil Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Civil Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows :

In Mathematics ; Courses 1, 3, 5, 11, 13, 16.

In French and German ; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English ; Course 1.

In Physics ; Course 10.

In General Chemistry ; Course 2.

In Mineralogy ; Course 1.

In Astronomy ; Course 3.

In Drawing ; Courses 1, 2, 4, 5, 6.

In Surveying ; Courses 1, 2, 3, 4.

In Civil Engineering ; Courses 1, 2, 3, 3a, 4, 5, 7, 8, 9, 10.

In Mechanical Engineering ; Course 7.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

2. *In Mechanical Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mechanical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows :

In Mathematics ; Courses 1, 3, 5, 11, 13, 16.

In French and German ; four Full Courses, to be selected by the student

from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Course 3.

In Mineralogy; Course 1.

In Drawing; Courses 1, 5, 6, 9.

In Surveying; Course 5.

In Civil Engineering; Courses 1, 3, 9.

In Mechanical Engineering; Courses 1 to 12, except 1a and 4a.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

3. In Mining Engineering.

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mining Engineering, the student must complete one of the two following sets of requirements:

I.

(Mining.)

In Mathematics; Courses 1, 3, 5, 11, 13, 16.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Courses 1, 5, 10, 12.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Surveying; Courses 1, 2.

In Civil Engineering; Courses 1, 3, 5, 7.

In Mechanical Engineering; Course 7.

In Mining Engineering; Course 1.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

II.

(Metallurgy.)

In Mathematics; Courses 1, 5a.

In French and German; four Full Courses, to be selected by the student from all the Courses offered in these two languages, which he is qualified to pursue.

In English; Course 1.

In Physics; Course 10.

In General Chemistry; Course 2.

In Analytical Chemistry; Courses 1, 5, 8, 10, 12, 16.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Mechanical Engineering; Courses 1, 2, 4.

In Mining Engineering; Course 1.

In Metallurgy; Courses 1, 2.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

REQUIREMENTS FOR THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, AND MINING ENGINEER.

The conditions on which the degree of Civil Engineer, as a second degree, is conferred, are as follows:

The degree of Civil Engineer may be conferred upon Bachelors of Science of this University, who have taken the degree for a course in civil engineering, if they furnish satisfactory evidence that they have pursued further technical studies for at least one year, and, in addition, have been engaged in professional work, in positions of responsibility, for another year. The first of the above requirements may be satisfied by pursuing at the University, under the direction of the Faculty, a prescribed course of study for an amount of time, not necessarily consecutive, equivalent to a college year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor of civil engineering, and he must prepare a satisfactory thesis on some engineering topic, to be presented, together with a detailed account of his professional work, one month, at least, before the date of the annual Commencement at which he expects to receive the degree.

The conditions on which the degrees of Mechanical Engineer and Mining Engineer, as second degrees, are conferred upon Bachelors of Science of this University who have taken the degree for a course in mechanical engineering or in mining engineering, are analogous in character and in amount to those given above for the degree of Civil Engineer.

II. THE PROFESSIONAL STUDY OF CHEMISTRY.

A course of training is provided, extending through four college years, giving a practical preparation for the pursuit of an analytical and consulting chemist. The work is also adapted to the purpose of teaching, or research in chemical science. After devoting one year mainly to the French and German languages as a basis for their use in scientific literature, and to mathematics as a support for physics and chemistry, the student enters directly upon laboratory practice in analytical chemistry, which extends through the remainder of the course. Qualitative analysis begins with the second year, and quantitative analysis is reached in the second semester of this year. Organic chemistry begins with the third year, in the second semester of which a study of chemical philosophy is taken. Laboratory physics may be taken in the third year. The larger part of the fourth year is devoted to original research, both experimental and literary. Manufacturing chemistry is given in the last year.

Candidates for the degree of Bachelor of Science in Chemistry are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 35).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Chemistry, the student must complete *twenty-six Full Courses*. The prescribed portion of the work is as follows:

In Mathematics; Courses 1, 5a.

In French; (a), for those who entered *without* French, Courses, 1, 4, 5;

or (b), for those who entered *with* French, Course 4.

In German; (a), for those who entered *without* German, one and three-fifths Full Courses, including Course 1 and one option in Course 2 (see page 47);

or (b), for those who entered *with* German, one Full Course, taken from options in Courses 3, 4.

In English; Course 1.

In Drawing; Course 3 or Course 4.

In Geology; Courses 1, 9.

In Physics; Course 10.

In General Chemistry; Courses 2, 3.

In Analytical and Organic Chemistry; Courses 1, 2, 5, 6, 6a, 9, 10, 11.

In Mineralogy; Course 2.

In Chemistry; additional, three Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*. Among his elective studies he is recommended to take (a) Course 2 in Botany, (b) Course 3 in Physics, or (c) Course 1 in Metallurgy and Course 12 in Analytical Chemistry.

A Register of graduates and students engaged in practical chemistry or as teachers of chemistry has been published, and copies can be obtained by addressing the Director of the Chemical Laboratory.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY.

The University curriculum has been altered and enlarged in order to provide a specific course of study for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research.

In the first year, modern languages, mathematics, and drawing, and in the second year, elementary physics and chemistry are required, as being absolutely essential to the successful prosecution of an extended course in science. Zoology, botany, and physiology are the most prominent subjects of the course, but full opportunity is given for extended work in physics, chemistry, palæontology, and other sciences. The laboratories of the University are provided with the necessary facilities not only for ordinary biological work, but for somewhat extended research, and every encouragement will be given to students, especially in the last year, to devote themselves to original investigations.

Candidates for the degree of Bachelor of Science in Biology

are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 35).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Biology, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Mathematics; Courses 1, 5a.

In French; (a), for those who entered *without* French, Courses, 1, 4, 5;
or (b), for those who entered *with* French, Course 4.

In German; for those who entered *without* German, one and three-fifths Full Courses, including Course 1 and one option in Course 2 (see page 47).

In English; Course 1.

In Philosophy; Course 1 or Course 3.

In Physics; Course 10.

In General Chemistry; Course 2.

In General Biology; Courses 1, 2.

In Zoology; Course 1.

In Botany; Course 6.

In Physiology; Courses 1, 2. (Omitted in 1888-9.)

In Hygiene and Physiological Chemistry; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

The following plan of study may serve to guide students in arranging the prescribed portion of their work, and also to indicate some of the subjects recommended for electives.

FIRST YEAR. *Prescribed:* Mathematics 1, 5a; French 1, 5, or French 4 and German 1, 2 (whichever the student is qualified to pursue); English 1.

Elective: French or German; Mineralogy 1; Geology 1, 2; Botany 3; Drawing 4.

SECOND YEAR. *Prescribed:* French 4 (unless previously taken); Philosophy 1 or 3; Physics 10; General Chemistry 2; General Biology 1, 2; Botany 6.

Elective: Mathematics 2 or 13, 6 or 16; French or German; Zoology 4.

THIRD YEAR. *Prescribed:* Zoology 1; Physiology 1, 2.

Elective: English 2; Physics 3; Analytical Chemistry 1; Hygiene and Physiological Chemistry 2; Geology 7; Botany 5; Zoology 6, 8a, 10.

FOURTH YEAR. *Prescribed:* Hygiene and Physiological Chemistry 1.

Elective: Analytical Chemistry 4; Special Investigations in Zoology, Botany, and Physiology.

IV. SUGGESTIONS TO STUDENTS PURSUING SPECIAL STUDIES IN SCIENCE.

Students who desire to pursue a special line of study in any of the physical sciences or in geology will observe the importance of taking the elementary Courses early enough to enable them to follow the proper consecutive order in the studies desired. The following schedules of studies in physics, in astronomy, and in chemistry, are given as guides to candidates for any of the Bachelors' degrees, who wish to pay special attention to those branches of science. The schedule of studies in geology is somewhat fuller, and is recommended to candidates for the degree of Bachelor of Science, who desire an education which shall be specially geological.

A. PHYSICS.

First Year. Mathematics 1, 5 or 5a; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 3, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3 with Mathematics 11 and Mechanical Engineering 6, or Analytical Chemistry 1; Philosophy 3; Physics 7, 12; General Chemistry 4; Astronomy 2, 5; Mineralogy 1 or 2.

Fourth Year. Philosophy 1; Physics 7, 12 (unless previously taken); General Chemistry 3; Mechanical Engineering 1, 2, or 4; and, if the student has time for them, Mathematics or Quantitative Analysis; Botany 3.

B. ASTRONOMY.

First Year. Mathematics 1, 5 or 5a; Drawing 1, 4, 9.

Second Year. Mathematics 2 or 13, 6 or 16; Physics 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 3, 11; Philosophy 3; Physics 7; General Chemistry 4 or 5; Astronomy 2, 5, 8, 9; Mineralogy 1.

Fourth Year. Philosophy 1; Astronomy 1, 4, 10; Mechanical Engineering 1, 2, or 4.

C. CHEMISTRY.

First Year. Mathematics 1, 5 or 5a; Geology 1; Drawing 1, 4, 9 (if the student has time for them).

Second Year. Physics 3, 10; General Chemistry 2; Drawing 1, 4, 9 (unless previously taken); Mathematics 2 or 13, 6 or 16, and General Chemistry 5 (if the student has time for them).

Third Year. Philosophy 3; General Chemistry 5 (unless previously taken); Analytical Chemistry 1, 5, 6; Mineralogy 2.

Fourth Year. General Chemistry 3; General Chemistry 6 with Analytical Chemistry 9, 11, 11a, 12, or Analytical Chemistry 7, 11, and Hygiene and Physiological Chemistry 2, 2a; Botany 2; Philosophy 1 and Mechanical Engineering 1, 2, or 4 (if the student has time for them).

D. GEOLOGY.

First Year. Mathematics 1, 5 or 5a; French 1, 5, or French 4 and German 1, 2 (whichever the student is qualified to pursue); English 1; Geology 1, 2; General Biology 1; Zoology 1; and, if practicable, a Course in Scientific Nomenclature.

Second Year. French 4 (if not previously taken); German; Physics 10; General Chemistry 2; Geology 3, 5, 6, 7; Drawing 4, 7.

Third Year. English 2; Philosophy 1, 3; Analytical Chemistry 1; Mineralogy 2; Geology 4. It is also recommended that electives be chosen from the following: Mathematics 2 or 13, 6 or 16; Analytical Chemistry 10; Astronomy 2; Geology 7.

Fourth Year. Geology 4 continued as 4a, 7 continued as 7a, 8; Drawing 2; Metallurgy 1, 2. It is also recommended that electives be chosen from the following: Mathematics 11; Physics 7; Astronomy 5; Zoology 7; and advanced Courses in Mineralogy and Lithology, Geology and Palæontology, Zoology, Physiology.

V. THE SCIENCE AND THE ART OF TEACHING.

The aims of the University in providing instruction in the Science and the Art of Teaching, are:

1. To fit University students for the higher positions in the public school service.

It is a natural function of the University, as the head of our system of public instruction, to supply the demand made upon it for furnishing the larger public schools with superintendents, principals, and assistants. Year by year these important positions are falling more and more into the hands of men that have received their education in the University. Till recently, the training given to our graduates has been almost purely literary; it has lacked the professional character that can alone give special fitness for the successful management of schools and school systems. Now, however, the University offers students that wish to become teachers ample facilities for professional study.

2. To promote the study of educational science.

The establishment of a chair of teaching is a recognition of the truth that the art of education has its correlative science; and that the processes of the school room can become rational only by developing and teaching the principles that underlie these processes. Systems of public instruction are everywhere on trial, and the final criteria by which they are to stand or fall must be found in a philosophical study of the educating art.

3. To teach the history of education, and of educational systems and doctrines.

The supreme right of the school is to grow; and much hurtful interference might be avoided by ascertaining the direction of educational progress and the history of educational thought.

4. To secure to teaching the rights, prerogatives, and advantages of a profession.

5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

THE TEACHER'S DIPLOMA.

The Teacher's Diploma will be given to resident graduates and to students of the University at the time of receiving a Bachelor's or a Master's degree, provided the candidate has completed three Courses of study offered by the professor of the science and the art of teaching, viz., Courses 1 and 2, and some three-hour Course, and, also, at least one of the Teachers' Courses offered by other professors, and by special examination has shown such marked proficiency in the Course chosen as qualifies him to give instruction.

RULES AND REGULATIONS OF THE DEPARTMENT.

I. ELECTION OF STUDIES.

1. The maximum number of hours a week a student may elect without special permission of the Faculty is the following:

During the first year, sixteen hours:

During the second year, eighteen hours:

During the third year, eighteen hours:

During the fourth year, twenty hours.

In cases of exceptional proficiency additional hours are granted by the Faculty on especial request; but in all cases requests for permission to take an additional number of hours must be made in writing, and must be deposited in the Registrar's box on or before the *first Monday* of the semester during which the additional work is desired.

2. In their first year, students are recommended to make their elections in accordance with the following schemes. In cases where, for good reasons, it is not practicable to elect sixteen hours a week, a smaller number (fifteen, or fourteen) may be chosen.

I. For candidates for the degree of Bachelor of Arts:

First Semester: Greek, four hours; Latin, three hours; Mathematics, three hours; French, four hours; English, two hours.

Second Semester: Greek, four hours; Latin, four hours; Mathematics, four hours; French, four hours.

II. For candidates for the degree of Bachelor of Philosophy:

First Semester: Latin, three hours; Mathematics, three hours; French and German, eight hours; English, two hours.

Second Semester: Latin, four hours; Mathematics, four hours; French and German, eight hours.

III. For candidates for the degree of Bachelor of Letters:

First Semester: Mathematics, two hours; French, four hours; German, four hours; History, or elective studies, six hours.

Second Semester: French, four hours; German, four hours; English, two hours; History, or elective studies, six hours.

IV. For candidates for the degree of Bachelor of Science (in General Science):

First Semester: Mathematics, three hours; French and German, eight hours; elective studies, five hours.

Second Semester: Mathematics, four hours; French and German, eight hours; English, two hours; elective studies, two hours.

V. For Candidates for the degree of Bachelor of Science (in Chemistry and in Biology):

The same as for the course in General Science, except as modified by differences in French and German. (See pages 70, 87, and 89).

VI. For Candidates for the degree of Bachelor of Science (in Engineering):

a. In Civil Engineering:

First Semester: Mathematics, four hours; English, two hours; Mineralogy, two hours; Drawing, four hours; French, German, or elective studies, four hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours.

b. In Mechanical Engineering:

First Semester: Mathematics, four hours; English, two hours; Drawing, two hours; Mechanical Engineering, five hours; French, German, or elective studies, five hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, nine hours.

c. In Mining Engineering:

First Semester: Mathematics, three or four hours; English, two hours; Drawing, two hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

Second Semester: Mathematics, four hours; Drawing, three hours; French, German, or elective studies, sufficient to make a total of sixteen hours.

3. Except as provided in (1) and (2) each student may elect his studies and may pursue them in any order he may choose, subject only to the following restrictions:

(a) Before entering on any study the student must give the instructor in charge satisfactory evidence that he is prepared to pursue it with advantage.

(b) If he is a candidate for a degree, he must at some time take all the studies "prescribed" for the degree he seeks.

(c) No student will be allowed to elect merely a part of a Course without special permission of the Faculty.

(d) No credit will be allowed to a student for work in any Course, unless the election of the work is formally made and reported to the Registrar before the work is begun.

(e) After the second Monday of each semester no study can be taken up or dropped without special permission of the Faculty.

(f) The Faculty will require a student to drop a part of his work at any time, if in their opinion he is undertaking too much; or to take additional work, if they think he is not sufficiently employed.

(g) The Faculty reserve the right to withdraw the offer of any study not chosen by at least six persons.

4. After matriculation, a student cannot, without special permission of the Faculty, be admitted to examination in any

one of the Courses given, until he has received in the University the regular instruction in such Course.

5. The student is urged to make his choice of studies with care, and with reference to some plan. The members of the Faculty will be ready to give advice and assistance in this regard.

II. EXAMINATIONS.

1. All students of this Department, whether candidates for a degree or not, if at work upon the credit system, are required to attend all the examinations in the Courses of study they pursue.

2. No student absent from any regular examination in any Course of study that he may have pursued, will be allowed to take such omitted examination before the next regular examination in that Course. In cases of great urgency, however, the Faculty may grant students special permission to be examined at an earlier date.

3. No student whose examination in any Course is reported as "*Incomplete*," will receive credit for that Course until after the examination has been completed. In case, however, the examination be not completed within one year, the unfinished Course will be regarded and treated as "*Not Passed*."

4. Any student reported as passed "*Conditionally*" in any Course, must remove the condition within one year from the date of the examination in which it was incurred; otherwise, the Course passed conditionally will be regarded and treated as "*Not Passed*."

5. Any student reported as "*Not Passed*" in any Course, will receive no credit for that Course until he has again pursued it as a regular class exercise and has passed the regular examination in the same.

6. Any student detected in the use of illegitimate help at any examination, will be regarded as an *Absentee* from that examination, and will be treated as such.

7. All students are regarded as strictly on probation until they have removed all conditions incurred in the examinations for admission to the University. All such conditions must be removed during the year following the date of the examination.

Students who have any admission conditions outstanding at the beginning of their second year of residence will not be allowed to join their classes until such conditions are removed.

III. RELATION TO OTHER DEPARTMENTS.

1. Candidates for a degree in this Department of the University, who wish to pursue studies in any other Department, may be granted that privilege, provided they lack no more than three Full Courses for graduation, and distribute their work in this Department as evenly as possible throughout the year.

2. All students admitted from other Departments of the University to the privileges of this Department are regarded in the class-room as members of this Department, and are required to pass the regular examinations with the classes in which they are enrolled. Violations of this requirement will be deemed a forfeiture of the privileges of this Department; but this rule is not to be interpreted as applying to those who are permitted to attend lectures or other exercises without being enrolled.

IV. ATTENDANCE AND DISCIPLINE.

The State of Michigan extends the privileges of the University without charge for tuition, to all persons of either sex, who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission of the President.

Such delinquencies as tardiness, absence, deficiencies, and offenses against good order, in the several departments of instruction, are ordinarily dealt with by the instructor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed, whenever in the opinion of the Faculty they are pursuing a course of conduct seriously detrimental to themselves or to the University.

The following is a By-Law of the Regents:

“Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfil, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time he shall be dismissed.”

FEES AND EXPENSES.

For information in regard to fees and expenses, see page 28.

DEPARTMENT
OF
Medicine and Surgery.

THE COLLEGE YEAR.

The fortieth course of instruction in the Department of Medicine and Surgery will begin October 1st, 1889, and will continue till the last part of June, 1890. There will be a Thanksgiving recess of three days, beginning on Tuesday evening before Thanksgiving; a holiday vacation from the evening of December 20th, 1889, to the evening of January 6th, 1890; and a spring recess from the evening of April 11th to the evening of April 21st, 1890. The lectures will continue to June 15th, 1890, at which time certificates will be given to those who have complied with the requirements for a full course. The examinations will then commence and be concluded in time for the Commencement exercises, June 26th, 1890.

EXTENSION OF THE COURSE.

To meet the requirements of the constantly increasing demands of medical science, and to accommodate and benefit those students who desire a thorough medical education, the course of instruction was some years ago extended to three full college years, of nine months each; and it is gratifying to know that this extension is appreciated, as is evinced by a large attendance of enterprising students, who have talent, energy, perseverance, and high aims.

In this improved arrangement a successive or graded course of study is combined with repetition of the more important lectures, thus obviating the serious objection of dismissing one part of a connected subject before its relations to other parts can

be seen and appreciated, and also avoiding the confusion incident to the presentation at the same time of so many parts of the general subject to the mind of the student at an early period of his studies.

This extended course affords time for the teaching and study of subjects not generally taught, or but very imperfectly, in many medical schools; and especially does it give more time for thorough work in the laboratories now provided. Though not fully covering the defects of preliminary education, this longer course, accompanied by repeated examinations and written exercises, remedies some of the deficiencies of earlier training, and is of itself an efficient means of mental discipline, and of literary as well as scientific culture. The practical results of this improvement have been most gratifying to the Faculty, to the patrons of the college, and to the students themselves.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission to the Department of Medicine and Surgery must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character.

Women are admitted, as to all other departments of the University, on the same conditions as men.

No previous study of medicine is required for admission. Candidates are asked to give an account of their previous educational advantages, and are examined, in writing, as to their elementary education and their fitness to pursue profitably the technical study of medicine. They are required to show familiarity with the subjects included in a good English education. The requirements for admission are as follows:

1. A competent knowledge of Arithmetic, Spelling, and Grammar, and the Art of Composition; and a respectable acquaintance with English Literature, such, for instance, as may be acquired by the study of Shaw's *Manual of English Literature*, or some similar work.
2. A competent knowledge of Political and Physical Geography. Any of the advanced Geographies used in the higher schools, and Guyot's *Physical Geography*, are recommended as text-books.
3. An outline of the history of modern civilized nations, and especi-

ally of American history ; such as may be found in the *Manuals of History*, used as text-books in high schools.

4. A competent knowledge of elementary Zoology, including an acquaintance with the characteristics of the principal divisions of the animal kingdom. Packard's *Zoology* may be cited as an illustration of a work to be studied.

In addition to the above requirements, *which alone* are insisted upon, students are recommended to acquire such a knowledge of the Latin language as will enable them to read and write correctly current or ordinary prescriptions, and appreciate the technical language of the natural sciences and of medicine. It is also considered highly desirable that they have a general grammatical acquaintance with the French and German languages. A similar acquaintance with Greek will also be serviceable to the student, and is highly recommended. But a knowledge of these ancient and modern languages is not required for admission.

Graduates or matriculates of any department of this University, or of any other university or college, or of any academy or high school approved by the Faculty of this Department, and persons holding certificates based on examination by some recognized medical society, or persons holding first-class or approved certificates from any reliable public school board of being properly qualified as teachers, will not be required to pass any examinations, but will be admitted on the presentation of the proper evidence to the Secretary of the Faculty.

The examination will be held at 2 p. m., Monday, September 30, 1889. Candidates are required to present themselves at this time as they are expected to be in attendance on the first day of the term, when the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidates to be present at the time announced, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt

for the payment of the matriculation fee and the annual fee. It will, therefore, be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Department of Medicine and Surgery, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Should students be ready to begin the study of medicine near the opening of the term in October, it is advised that they enter this Department at once and remain continuously during the three college years—the instruction in the graded course being adapted to beginners. Should it be more convenient for them to begin medical studies at a period distant from the opening of the college year, they should procure one of the text-books in anatomy, in physiology, in chemistry, and perhaps in general pathology and materia medica, and a medical dictionary. A study of such works, even without a preceptor, will afford some general acquaintance with these fundamental subjects, and will, at least, give a knowledge of terms that will be of service in more readily comprehending the lectures.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one year, may be admitted to advanced standing after having passed a satisfactory examination on all the studies which have already been pursued by the class to which they seek admission.

It is, however, very earnestly recommended that students, even though they may be able to pass a fair examination on the first year's studies, should nevertheless spend the whole three years in this Department and take the regular graded course. If not, they must lose some of the lectures, many important demonstrations, and class recitations in anatomy and other subjects; they will be much restricted for time to do the amount of work required in the laboratories, and will also be obliged to lose many of the clinics and special practical exercises, and some of the hospital work provided for the last year's instruction.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in

the order in which they pay their fees to the Treasurer, and each student is expected to occupy during the session the seat selected. But, by courtesy, at the clinical and other practical lectures, members of the graduating class are allowed the privilege of seats nearest the patient and the lecturer.

COURSE OF INSTRUCTION.

The course of instruction is systematically arranged, and so graded that the more elementary branches and the practical courses are first taken by the student, while the more advanced courses and theoretical subjects are presented later in the course, so as to secure, as far as practicable, an orderly succession of studies; while the more fundamental subjects are presented a second time during the course, so as to secure a more perfect comprehension of their principles and relations, and to fix the facts more firmly in the mind. The hours of the required lectures are so arranged, four being given each day, that but few are given at the same time, and every facility is afforded for students to attend the repetition of the principal lectures as often as may be thought profitable. The Faculty recognize, what is evident in the experience of all medical students, that attendance upon lectures on the same subject a second time, after other related branches have been studied, is much more interesting and profitable than the first; and hence they require students to attend lectures on all the leading subjects more than once.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and such of the lectures and demonstrations as it is thought by each member of the Faculty not desirable to be presented to the combined classes, are given separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various other class exercises, it is found that both may with propriety be united.

The following schedule shows the arrangement of studies throughout the course of three years:

FIRST YEAR.

Subjects completed the first year.	{	Osteology.	{	In Upper Lecture Room.		
		Embryology, Comparative.				
		{	Physiological Chemistry.	{	In Lower Lecture Room.	
			Sanitary Science.			
Studies taken the first year and continued through the second year.	{	Histology and Microscopy.	{	In Lower Lecture Room.		
		Anatomy, Descriptive.				
		Physiology.				
		Materia Medica.				
Practical work that should be completed the first year.	{	General Chemistry.	{	In the Histological Laboratory in sections of twenty. Fifteen lessons of afternoon work, one lesson each week. Two sections yearly, beginning in October and in February.		
		Practical Histology.				
		Qualitative Chemistry.				
Practical Anatomy.	{	In the Chemical Laboratory, requiring twelve weeks of afternoon work. Classes begin the first week in October, the first week in January, and the last week in March.				
		Each dissection requires eight to ten weeks of afternoon work in the Anatomical Laboratory. There are two sections yearly, beginning in October, and in January. Some students may be able to complete one dissection in their first year.				

SECOND YEAR.

Subjects completed the second year.	{	Anatomy, Descriptive.	{	In Anatomical Laboratory.
		Physiology.		
		Materia Medica.		
		General Chemistry.		
		Organic Chemistry.		
		Medical Jurisprudence.		
Subjects taken the second year and continued through the third year.	{	Theory and Practice of Medicine.	{	In Physiological Laboratory.
		Surgery.		
Practical work that should be completed the second year.	{	Obstetrics and Gynecology.	{	In Chemical Laboratory.
		Practical Anatomy.		
		Analysis of Urine.		
Optional Courses.	{	Practical Physiology.	{	In Histological Laboratory.
		Electro-Therapeutics.		
		Advanced Histology.		

THIRD YEAR.

Subjects completed the third year.	{	Theory and Practice of Medicine.
		Surgery.
		Obstetrics and Gynæcology.
		Pathology.
		All Special courses, as Ophthalmology, Diseases of the Nervous System, Surgical Anatomy, Diseases of Women and Children, Sanitary Science, Minor Surgery, Physical Diagnosis, Diseases of the Skin, etc., etc.
Practical work.		Practical Pathology. In Pathological Laboratory.

During the third year the afternoons are largely devoted to attendance upon Clinical Lectures and work in the University Hospital.

EXAMINATIONS.

Written examinations are held in the middle and at the end of the year. The final examinations in osteology, embryology, physiological chemistry, sanitary science, and histology are held during the first year. The final examinations in anatomy, physiology, materia medica, and general chemistry are held at the end of the second year; those in practice of medicine, surgery, obstetrics and gynæcology, and the special subjects at the end of the third year. The final examinations are conducted, in part at least, in writing.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have completed the required courses in practical anatomy and practical chemistry, and, unless the full course of study has been taken in this Department of the University, he must have been engaged in the study of medicine for the period of three full years, including the time spent in attendance upon lectures. He must also have passed satisfactory examinations on all the studies included in the full course of instruction; or, if admitted to advanced standing, he must have attended at least two full courses of medical lectures, *the last of which must be in this Department*, and have passed the required examinations.

In consequence of the prominence given to written examinations through the course, no graduating thesis is required.

Students who, in the first year, are allowed by a special vote of the Faculty to take all the lectures of which two courses are required, and who also take a suitable number of those required but once, may, after examination, obtain permission to pursue their studies with a competent preceptor out of the University during their second year; and, after completing the course required by strict attendance during the full third year, may present themselves for examination for the degree at the end of that year.

The Department of Medicine and Surgery is distinct in its organization from every other department of the University, and, under the regulations of the Board of Regents, the professors are not required to take any part in conducting the examinations of other students, or in recommending them for graduation, or in signing their certificates or diplomas.

FACILITIES FOR INSTRUCTION.

This Department is abundantly supplied with collections of plates, photographs, models, specimens, preparations, apparatus, and instruments, for the purpose of illustrating the different studies embraced in the course. Additions are made from time to time to these collections by special appropriations of the Board of Regents, so that the Faculty are able to adopt every new method of illustration, and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

ANATOMY.

The museums of Professors Ford and Sager, embracing several thousand specimens, which are the result of many years' labor in the collection and preparation of materials intended to aid directly in teaching, have now become the property of the University, and are used in the daily work of the class-rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, the various changes

that occur from infancy to old age, and the processes of first and second dentition; dissections, general and partial, of the vascular, nervous, and muscular systems, both normal and abnormal; models of various portions of the body in wax, papier maché, and plaster, illustrating morbid growths, skin diseases, etc.; preparations in the comparative embryology, neurology, and craniology of the vertebrata; human embryology, and anatomy and pathology of the diseases of women, etc. The collections of monstrosities, both single and double, of man and the lower animals, is one of the largest in the United States. There have been added recently over three hundred preparations in human and comparative anatomy, normal and pathological. The number of new and valuable specimens is constantly increasing.

ANATOMICAL LABORATORY.

(In charge of Dr. HERDMAN.)

The Anatomical Laboratory recently erected for the accommodation of the classes in practical anatomy, is admirably adapted for this purpose; the rooms are large, well lighted, and well ventilated.

The Anatomical Law of Michigan furnishes, without embarrassment, an ample supply of material for the purposes of practical anatomy, and for all students who desire it and have completed the requirements in descriptive and practical anatomy, a course in operative surgery upon the cadaver is offered.

In their first year, students have the opportunity, under competent instruction, to study comparative anatomy and physiology practically by dissecting various animals. While thus becoming familiar with structures and tissues, they also acquire dexterity in the use of instruments preparatory to work upon the human cadaver.

MATERIA MEDICA.

The collections illustrative of Materia Medica consist of a very complete collection of crude organic medicinal substances, finely displayed and arranged according to their order in Natural History; also about one thousand other specimens of simple mineral and vegetable substances, and pharmaceutical and official preparations, active principles, etc., arranged in groups con-

venient for study. Medical Botany is further illustrated by several hundred large finely-colored plates.

CHEMISTRY.

The Chemical Laboratory provides thorough instruction and suitable appliances for the practical study of all branches of medical chemistry. In each of the two laboratory courses *required for graduation*, namely, qualitative chemistry (devoted to the study of chemical changes and incompatibilities), and analysis of urine (applied to clinical uses and physiological study), students are taken in sections of limited number for daily drill in the class-room, to direct the daily practice in the laboratory. Before beginning laboratory work the student takes a preparatory course, with daily recitations, in chemical notation, and at the close of the work in each course is held to an examination. In each of the required courses just mentioned one section begins work October 1; another section, the first week in January; and a third, the last week in March.

PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

Two extended optional courses have also been established, one in physiological and pathological chemistry, and another in toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in qualitative and quantitative analysis, and the special examination of foods and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiology, physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in quantitative analysis, and in pharmaceutical preparations, are also open to the students of medicine who may desire such special training.

ELECTRO-THERAPEUTICS.

A special practical course in this important branch of instruction is offered to advanced students. The apparatus for

illustration and experiment consists of representative specimens from the principal foreign and American manufacturers of electrical apparatus. Working models of these are put into the hands of each student for practical use.

THE PHYSIOLOGICAL LABORATORY.

(In charge of Dr. SEWALL.)

A brief description of this laboratory is given on page 26. The instrumental equipment is unusually complete, and comprises most of the more essential instruments used in physiological demonstration and research. The apparatus is all new and is of the highest finish and accuracy. The list of instruments includes: five *du Bois* induction coils; two rotating cylinders with clock-work; one *Ludwig's* kymographion; tuning forks for electrical interruption; one adjustable electrical interrupter with clock-work; *Fick's* spring-kymograph; recording chronographs; *Browning* spectroscope; *Thompson's* galvanometer; *Roy-Gaskell* heart tonometer; *Zeiss* microscopes; foot lathe with working tools; etc., etc. The laboratory is open daily for physiological experiment and research.

THE HISTOLOGICAL LABORATORY.

(In charge of Dr. STOWELL.)

The Histological Laboratory is supplied with over thirty superior microscopes of American manufacture, besides others imported from Europe, and is also well equipped with the necessary apparatus for a thorough study of normal histology.

The student becomes familiar with the manipulation of the microscope; with the methods employed in preparing and mounting specimens; and with the structure of the more important organs and tissues of the body. Each student is required to prepare and mount at least fifty specimens, and to make twenty-five free-hand drawings. These are retained by the student. Provision is made for those desiring to take advanced work. A room has been provided and fully equipped with microscopes and accessories. This is especially intended to accommodate those who desire to pursue some special line of work, or some original study. A limited number only can take this advanced work.

During the last college year nearly three hundred students availed themselves of the opportunities for study offered in this laboratory.

THE PATHOLOGICAL LABORATORY.

(In charge of Dr. GIBBES.)

The Pathological Laboratory is furnished with prepared material, illustrating every disease of the human body and many of the lower animals. Each student is taught thoroughly how to harden and prepare morbid material for microscopical examination, and to stain it for the examination of its pathological histology, and also for the presence of micro-organisms. Instruction is given for the examination of sputa and various fluids, for the detection of bacteria. During the course each student makes a complete set of typical preparations of the various changes produced by disease in the different organs of the body, and of all the new growths; this set comprises about seventy-two specimens and becomes the property of the student. Every specimen is separately demonstrated and the morbid changes are fully explained. The laboratory is supplied with microscopes made by R. & J. Beck, of London, England, and constructed especially for pathological research.

Opportunity is given to advanced students for pathological research under the direction of the professor of pathology.

THE HYGIENIC LABORATORY.

(In charge of Dr. VAUGHAN and Mr. NOVY, assisted by Dr. FRANCIS W. BREWER.)

A description of this laboratory is given on page 27.

MEDICAL JURISPRUDENCE.

Lectures on the law relating to physicians are given by Professor Rogers, Dean of the Department of Law.

THE UNIVERSITY HOSPITAL.

The University Hospital, with pavilion buildings of sufficient capacity for a large number of patients, is thoroughly equipped, and is in the immediate charge of a competent house surgeon and physician and an experienced matron. The whole is placed under the direction of the Faculty, who attend regu-

larly upon the patients (each upon such cases as come within his special department) and give clinical instruction in the wards to advanced students. In connection with the hospital there is a spacious clinical amphitheatre where clinics are regularly held every day during the college year, for medical, surgical, gynecological, and ophthalmological cases, at which time examinations are made, prescriptions given, and surgical operations performed in the presence of the class.

A lying-in ward is established in which senior students are given an opportunity to attend cases of labor, when available, and become familiar with the duties of the lying-in room, under the immediate direction of the professor of obstetrics.

There are separate wards for the reception and treatment of patients affected with diseases of the eye and ear. Students are required to take the history and keep a record of patients, and, under proper supervision, are offered an opportunity of personally examining the patients. It is the aim of the Faculty to make instruction in this branch of medicine systematic and thorough, and this they are enabled to do by an abundance of interesting cases which present themselves in the clinic every year.

For the treatment of diseases of the nervous system the hospital is furnished with apparatus for generating all kinds of electric currents. Attendants especially skilled in the application of electricity and massage are put in charge of such cases.

The hospital is kept open for patients during the whole college year, but no contagious diseases are admitted. Under the present organization, patients are much better accommodated, and clinical instruction is rendered more systematic and efficient than was formerly possible. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services of the Faculty being rendered gratuitously to those made available for clinical instruction.

Patients who desire to enter the hospital are requested to write to the resident physician to ascertain if there is room for their accommodation, and to obtain a circular giving more fully the rules governing admission.

About fifteen hundred cases are annually received into the hospital, examined, prescribed for, and operated upon in the

presence of the students. A large portion of these are from a distance and are cases of more than common interest, including many cases of chronic diseases of the lungs, the heart, and the nervous system, and of the most important operations in the surgical, ophthalmological, and gynæcological departments.

MUSEUMS AND LIBRARY.

Students in medicine have access to the botanical, zoological and geological cabinets of the University, estimated to contain 255,000 specimens. The General Library, containing about 54,000 volumes, of which 3,707 are medical works, is also open to all students. A complete catalogue of the library, arranged both by authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe are taken and kept on file.

TEXT-BOOKS AND BOOKS OF REFERENCE.

The books mentioned in the following list are standard authorities, and will form a good nucleus for a medical library. Any one of those mentioned in each department will answer the necessities of the student; and, whenever a preference exists, it is given to the one first in order on the list:

MEDICAL DICTIONARY.—Dunglison or Thomas.

ANATOMY.—Gray; Leidy; Quain; Heitzmann; Darling; Ford's Questions on Anatomy, Histology, and Physiology; Weiss's Practical Human Anatomy; Ranney's Anatomy of Nervous System.

HISTOLOGY.—Stowell's Manual; Klein; Stricker.

PHYSIOLOGY.—First Year—Martin's Human Body; Kirkes's Handbook of Physiology; Yeo's Manual of Physiology. Second Year—Foster's Text-book of Physiology; Landois and Stirling's Physiology.

CHEMISTRY.—*General Chemistry.* Miller's Chemical Physics; Miller's Inorganic Chemistry; Bloxam's Chemistry; Fownes's Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry; Vaughan and Novy's Ptomaines and Leucomaines.

MATERIA MEDICA AND THERAPEUTICS.—H. C. Wood, Jr.; Stillé; Bartholow; Ringer.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Green; Zeigler; Wagner; Paget; Williams's Principles. *For Reference.*—Virchow.

OBSTETRICS.—Parvin; Lusk; Playfair; Leishman; Galabin. *For Reference.*—Schroæder; Cazeaux; Hodge. *Special Subjects.*—Tanner on

Pregnancy; Barnes on Obstetric Operations; Elliott's Obstetric Clinic; Barker on Puerperal Diseases.

DISEASES OF WOMEN.—Thomas; Emmet; Skene; Goodell's *Lessons in Gynæcology*; Byford; Mundé's *Minor Surgical Gynæcology*. *Special Subjects.*—Tilt on Uterine Therapeutics; Klob on Pathological Anatomy of the Female Sexual Organs; Peaslee on Ovariectomy; Sims on Uterine Surgery; Emmet on Vesico-Vaginal Fistula; Skene on Diseases of the Bladder and Urethra.

DISEASES OF CHILDREN.—J. L. Smith; Vogel; Tanner; Meigs and Pepper. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; Combe on the Management of Infancy; Routh on Infant Feeding; Holmes, or Guersant, on the Surgical Diseases of Children.

PRACTICE OF MEDICINE.—Palmer; Loomis; Flint; Strümpell; Davis; Bristowe; Roberts.

Special Subjects.—DaCosta or Finlayson, Medical Diagnosis; Loomis on Physical Diagnosis; Hall, Differential Diagnosis; Seifert and Müller, Clinical Diagnosis.

Diseases of the Nervous System.—Ross; Gowers; H. C. Wood, Jr.; Hammond; Bramwell on Diseases of the Spinal Cord.

DISEASES OF THE SKIN.—Duhring; Robinson. *For Reference.*—Bulkley on Eczema and Acne.

SURGERY.—Erichsen; Wyeth; Druitt. *Special Subjects.*—Billroth on Surgical Pathology; Hamilton on Fractures and Dislocations; Ranney on Surgical Diagnosis; Sayre on Club Foot; Sir Henry Thompson, or Gouley, on Genito-Urinary Organs; Henri Leonard on Bandaging. *In Minor Surgery and Surgical Appliances.*—Le Gros Clark; Annandale; Wales; Sargent. *For Reference.*—Gross's System of Surgery; Agnew; Holmes's System of Surgery.

OPHTHALMOLOGY AND OTOLGY.—*On the Eye.*—Juler; Schweigger; Sælberg Wells; Loring on the Ophthalmoscope. *On the Ear.*—Roosa; Burnett; Pomeroy; Hartmann.

The student who begins a course of reading without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, anatomy, physiology, and general and medical chemistry; and advancing to the other studies, to select one of the first-mentioned text-books in each department, passing to the "*Special Subjects*" only when near the completion of the course, or as he may desire for particular reasons to become more fully informed on them.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *twenty dollars*, which covers all the expense for practical anatomy during the whole college course, is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological and pathological laboratories. This charge is subject to change by the Regents as may be found necessary. A charge of *one dollar* is made to students who take the course in electro-therapeutics.

The professors make no charge for lecture tickets, nor are there any additional charges for the recitations conducted by the assistants to the several professors.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this Department, be permitted such attendance on the payment of the matriculation fee only.

The total amount of fees paid to the University during the whole three years' course, for matriculation, incidental expenses, materials used, and diploma, is, for Michigan students, about \$139.00; and for others, about \$184.00; varying a little with the student's actual laboratory expenses.

For additional information in regard to expenses, see pages 28 and 29.

LETTERS OF INQUIRY, ETC.—All letters of inquiry should

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

be addressed to Dr. Wm. A. Campbell, Secretary of the Department of Medicine and Surgery, Ann Arbor, Michigan.

Students arriving at Ann Arbor, and desiring further information should apply at the office of the Secretary in the Medical Building. The office will be open daily during the last week in September, and the Secretary will be in attendance each day from 2 to 5 P. M.

Department of Law.

At the time this Calendar is issued some important changes in the course of instruction, now pursued in the Department of Law, are under consideration. If these changes are adopted they will be embodied in the "Law Announcement," which is to be subsequently issued, and for which all should apply who contemplate entering the Department.

In this Department it is the constant endeavor of the Faculty to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country. No effort will be spared to make the Department deserve in the future a prosperity like that it has hitherto enjoyed. A spacious building is devoted to its accommodation, with ample debating and society rooms, and in every respect the conveniences of the Department are exceptionally good.

IMPROVED AND EXTENDED COURSE OF INSTRUCTION.

The course of instruction has been recently extended to two years of nine months each. The lengthening of the course of study in the Department was due to the conviction that the standard of legal education should be raised, and that students should be able to obtain a more thorough and extended preparation for the practice of law. It is the aim of the Department to elevate the standard of legal education and fitness for the legal profession.

By the extension of the term so as to include the entire college year, opportunity is afforded the student in this Department, without additional expense, to attend some of the lectures delivered in the Department of Literature, Science, and the Arts. These lectures will be found in a high degree useful and important, and students are encouraged to give attention to them, and

especialy to the constitutional history of this country and of England.

When the Department was established, the course of instruction was so arranged that the members of both classes heard the same lectures, receiving to that extent their instruction in common. This method of instruction has, however, been abandoned, and instead thereof a graded course of instruction has been adopted, thereby promoting the efficiency of the Department, and making possible a more scientific teaching of law.

The following more specific statements indicate the course of instruction in the Department of Law, and the subjects upon which students are required to hear lectures and pass satisfactory examinations.

THE LECTURE COURSE.

It is the design of the Department to give instruction that shall fit students for practice in any part of the country. The course of instruction embraces the several branches of Constitutional, International, Maritime, Commercial, and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and includes such instruction in Common Law and Equity Pleading, Evidence, and Practice, as will lay a substantial foundation for practice in all departments of law. Instruction is also given in the History of the Common Law.

Lectures are delivered as follows:

TO THE JUNIOR CLASS.

THE LAW OF THE DOMESTIC RELATIONS, *Professor Rogers.*

TORTS, *Professor Rogers.*

PLEADING AND PRACTICE, *Professor Griffin.*

PERSONAL PROPERTY AND TITLE THERETO, BY GIFT, SALE, MORTGAGE,
AND ASSIGNMENT, *Professor Griffin.*

CONTRACTS, *Professor Wells.*

AGENCY, *Professor Wells.*

PRIVATE CORPORATIONS, *Professor Wells.*

PARTNERSHIP, *Professor Wells.*

HISTORY OF REAL PROPERTY LAW, *Professor Thompson.*

FIXTURES, *Professor Thompson.*

EASEMENTS, *Professor Thompson.*

LANDLORD AND TENANT, *Professor Thompson.*

BAILMENTS, *Assistant Professor Knowlton.*

TO THE SENIOR CLASS.

CRIMINAL LAW, AND MEDICAL QUESTIONS BEARING ON IT, *Professor Rogers.*

WILLS, THEIR EXECUTION, REVOCATION, AND CONSTRUCTION, *Professor Rogers.*

THE ADMINISTRATION AND DISTRIBUTION OF ESTATES OF DECEASED PERSONS, *Professor Rogers.*

JURISPRUDENCE OF THE UNITED STATES, *Professor Griffin.*

EVIDENCE, *Professor Griffin.*

CONSTITUTIONAL LAW, *Professor Wells.*

PRIVATE INTERNATIONAL LAW, *Professor Wells.*

BILLS AND NOTES, AND COMMERCIAL LAW GENERALLY, *Professor Wells.*

THE LAW OF MUNICIPAL CORPORATIONS, *Professor Wells.*

THE LAW OF REAL PROPERTY, *Professor Thompson.*

EQUITY JURISPRUDENCE, AND EQUITY PLEADING AND PROCEDURE, *Professor Thompson.*

MINING LAW, *Professor Thompson.*

LAW OF CARRIERS, *Assistant Professor Knowlton.*

INSURANCE LAW, *Doctor Bigelow.*

ADMIRALTY LAW, *Judge Brown.*

HISTORY OF THE COMMON LAW, *Doctor Hammond.**

SPECIAL HEADS OF MEDICAL JURISPRUDENCE, ——— ———.

TOXICOLOGY IN ITS LEGAL RELATIONS, *Doctor Vaughan.*

LEGAL MICROSCOPY, *Doctor Stowell.*

Members of the junior class are not allowed to attend the lectures delivered to the senior class. The work assigned is fully sufficient to occupy their attention during the year, and it would only be confusing for them to attempt to hear lectures on subjects additional to those assigned to them. But the members of the senior class, inasmuch as they have been over the subjects of the junior year, are encouraged to attend the lectures delivered to the junior class, so far as they may be able so to do. Such a review of previous work, it is thought, will help to establish the principles of the law more firmly in the memory of the student.

The lectures to the senior class commence at ten o'clock A. M., and those to the junior class at three and one-half o'clock P. M.

* This Course is not delivered in 1888-89. It may be expected, however, in 1889-90.

TEXT-BOOK INSTRUCTION.

In addition to the instruction by lectures is the instruction by text-books.

The members of the junior class are required to attend daily recitations in Cooley's edition of Blackstone's Commentaries, Anson on Contracts, and Stephen on Pleading.

Members of the senior class who come from Code States are expected to attend regular recitations in Bliss on Code Pleading, and they will find the instruction thus obtained invaluable in their subsequent practice. Students from States where the reformed procedure has not been introduced, may or may not, at their option, attend such recitations.

All of the above text-book work is under the direction of Assistant Professor Knowlton.

THE STUDY OF LEADING CASES.

As much benefit can be derived from a proper study of what are known as Leading Cases, and inasmuch as it is desirable that students should be familiar with the more important of these cases, the members of the senior class are requested to purchase "Indermaur's Common Law Cases." They are expected to make themselves familiar with the cases contained in that work, and they are examined upon them during the year. This work is under the direction of Professor Rogers.

MEDICAL JURISPRUDENCE.

It has been thought desirable that students of law should receive instruction in certain branches of medical jurisprudence, and arrangements have accordingly been made for the delivery of a course of lectures on certain medico-legal subjects which are of especial interest to the legal profession. These lectures are delivered during the second semester, and to the members of the senior class only.

Lectures are given on some special heads of medical jurisprudence, including signs and symptoms of pregnancy, abortion and premature labor, duration of gestation, puerperal insanity, infanticide, and rape.

The lectures on legal microscopy consist of a discussion of

those subjects, liable to come before the courts, where the microscope can be employed as an aid in arriving at a correct diagnosis;—as in the detection and identification of blood stains, of mineral and vegetable poisons, of the complex tissues, of hair, of commercial fibres, etc.

The lectures on toxicology cover the subject of poisons in its medico-legal relations.

ELOCUTION AND ORATORY.

It is important for those who study the law with the view of becoming advocates, that they should give attention to the subject of forensic eloquence, the better to equip them for the performance of their duties as advocates. It is a mistake to suppose that excellence in speaking is simply a gift of nature, and not the result of patient and persistent labor and study. Instruction in elocution and oratory is therefore necessary to law students. The junior class receive instruction in vocal culture, articulation, and pronunciation; position and gesture; quality and force of voice. An advanced course in oratory has been arranged for the senior class. Instruction in this subject is given throughout the second semester.

EXAMINATIONS.

The members of both classes are examined daily throughout the year on the lectures delivered. At the end of the first year the members of the junior class are subjected to an oral and written examination on the lectures delivered during the year, and their promotion to the senior class is dependent on the manner in which they pass such examination. The examination of the junior class at the end of the year is final on the subjects of that year.

At the end of the second year the members of the senior class are required to pass satisfactory oral and written examinations on the subjects lectured on during the senior year.

Satisfactory examinations must also be passed by the members of both classes in the text-books used for the purposes of instruction.

In the case of written examinations the student is required

to certify on honor that previous to the examination he had no knowledge as to the questions to be propounded, and that he has received no assistance in making his answers thereto, and has given no assistance to others.

The Faculty, however, do not hesitate to drop a student from the rolls at any time during the year, on becoming satisfied that such student is neglecting his work and not conforming to the requirements of this Department.

CONSTITUTIONAL HISTORY AND POLITICAL SCIENCE.

It seems now to be conceded not only that the law should be studied in a law school rather than in an office, but that the law school should be connected with a university, where students may avail themselves of opportunities for the study of such other branches of learning as are of allied significance.

It is believed that great benefit may be derived by students in the Department of Law from the instruction given on kindred subjects in the Department of Literature, Science, and the Arts. Arrangements have therefore been made by means of which students in the Department of Law, having first obtained permission from the Law Faculty, may, on special application to the Registrar of the Department of Literature, Science, and the Arts, attend lectures delivered in that Department, free of charge. The Law Faculty, however, reserve the right to require such students to give up any or all studies they may be pursuing in the Literary Department, whenever it appears that the pursuit of these studies is attended with an unsatisfactory performance of the duties required in the Department of Law. Among the subjects upon which instruction is there given may be named the following as being particularly suitable for law students: Roman Law*; Political and Constitutional History of England; Political and Constitutional History of the United States; Comparative Constitutional Law; Political and Social History of Europe during the Middle Ages; Elements of International Law; History of Treaties. Instruc-

* This Course is not delivered in 1888-89. It may be expected in 1889-90.

tion is also given in that Department upon social, sanitary, and economic sciences. Compare pages 51, 52, and 55.

REQUIREMENTS FOR ADMISSION.

Any person is at liberty to matriculate in the Department of Law, and have a seat assigned him for attendance upon the lectures.

If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age, and must pass such examination in respect to general education as shall satisfy the Faculty that his educational attainments are such as will justify his entering upon the practice of the law when his legal studies are completed. Examinations will be held in the Lecture Room, in the Law Building, at 2 p. m., on Thursday and Friday, September 26th and 27th, 1889. The examination on the first of these days will have reference to general education, and will be on the subjects hereinafter named. The examination on the succeeding day will have reference to legal education, and is confined to candidates for advanced standing. Applicants for advanced standing are required to be present at both of these examinations. Candidates are required to present themselves on these days, as they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Graduates of colleges, and students who have honorably completed an academical or high-school course, and who present a certificate or diploma from the academy or high school will be admitted without preliminary examination. No student who does not present such certificate or diploma will be admitted as a candidate for a degree, until he has passed a satisfactory examination in arithmetic, geography, orthography, English composition, and the outlines of the history of the United

States, and of England.* The examination will be conducted in writing, and the papers submitted by the applicants must evince a competent knowledge of English grammar.

Inasmuch as many present themselves a long time after completing their school education, it may be said that the examination will not be technical. The object is not to ascertain the amount of technical school-book knowledge which the candidate possesses, but the aim is to ascertain the results of his previous training, and his present practical capacity and ability to appreciate the technical study of law.

Before admission to examination, every student is required to present to the Dean of the Law Faculty the Treasurer's receipt for payment of the matriculation fee and annual fee. It is essential, therefore, that a candidate for examination should apply first to the Steward of the University at his office in University Hall, register his name as a student in the Department of Law, and pay his fees to the Treasurer. He is then entitled to apply for admission to examination, and in case of rejection, the moneys paid preliminary to such examination will be refunded by the Treasurer.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture room in the order in which they pay their fees to the Treasurer, and each student is expected to occupy, during the session, the seat selected.

CERTIFICATES OF ATTENDANCE.

When a person is connected with the school for a period not entitling him to graduate, he may on application to the Dean of the Faculty, receive an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

REQUIREMENTS FOR GRADUATION.

The degree of Bachelor of Laws will be conferred upon such

* Ransome's Short History of England, or Green's History of the English People are recommended as affording the student a proper preparation for the examination in English History.

students as shall pursue the full course of two years in this Department, and pass an approved oral and written examination. It will also be conferred upon those who, having attended another law school for a period equal to one year of our course, or practiced law for one term under a license from the highest court of general jurisdiction in any State, where the requirements for admission to the bar are equal to those in Michigan, shall also pursue one year's course in this Department and pass a like examination.

Special cases depending on previous reading in a law office for a considerable period will be decided by the Faculty on application accompanied by a showing of the facts.

Each candidate for a degree will be required to prepare and deposit with the Faculty, before the commencement of the second semester of his senior year, a dissertation, not less than forty folios in length, upon some legal topic selected by himself. The dissertation must be satisfactory in matter, form, and style; and the student presenting it will be examined upon it.

The Faculty require that the theses shall be printed on a type-writer, or otherwise, and bound, and left with the Department. Special rates can be obtained for doing this work, and two or three dollars will cover the expense of printing and binding. In special cases the Faculty will not insist on this being done, if it should appear to be a burden to a needy student.

MASTER'S DEGREE.

The degree of Master of Laws is not conferred by the University. But any graduate of the Department of Literature, Science, and the Arts, who is pursuing professional studies in *this Department*, may, upon proper application to the Law Faculty, and to the Faculty of the Department of Literature, Science, and the Arts, be permitted to become at the same time a candidate for the degree of Master of Arts, Master of Science, Master of Philosophy, or Master of Letters, as the case may be, on condition that his term of residence and study covers two years before he can be admitted to an examination for such a degree. The privilege thus extended to graduates of this University is also extended to graduates of other colleges who can satisfy the

Faculty of the Department of Literature, Science, and the Arts, that the courses of study for which they obtained their first degrees are equivalent to the courses of study required for the corresponding degrees at this University. See page 73.

Useful and desirable opportunities are thus afforded to college graduates who wish to study law and at the same time to supplement their professional studies with a broader knowledge of some of the branches taught in the Department of Literature, Science, and the Arts. They are thereby enabled to enlarge their acquisitions in such branches as will be helpful to them in their professional work.

It is understood, however, that on complaint of unsatisfactory work in this Department, the Law Faculty will require students of law to discontinue their studies for the Master's degree.

MOOT AND CLUB COURTS.

Moot Courts are held from time to time during the term, in which students discuss cases previously assigned them for that purpose by the professors. These Courts are presided over by the professor lecturing for the day, who, at the conclusion, reviews the arguments and gives his decision upon the points involved. The effort here is to make not merely *theoretical*, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Court is made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and the attention of the Faculty is directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity is afforded all the senior students to participate in this court.

Moot Courts are conducted on the theory that certain facts are true, and that the only subject open to discussion is the rule of law to be applied to them. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings, and draw up a brief in which the rules of law are stated under appropriate divisions and sustained by authorities which he proposes to rely upon in his oral argument. The

pleadings are submitted to the professor who lectures on the subject of pleading and practice. He calls the attention of the student to such errors as may exist, and gives such other practical information as he may deem advisable.

Club Courts, too, are organized among the students, to be arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These courts, thus far, have been found alike interesting and useful to those who have participated in them. The Club Courts are open to members of either the senior or junior class, and students are strongly recommended to connect themselves with some one of these organizations. There are also two flourishing literary societies established and conducted by the students of law for purposes of literary culture.

While thus endeavoring to impart legal knowledge, the fact is not lost sight of, that a high moral standard is a most important requisite to a successful and honorable career; and no pains are spared in impressing this fact upon students, and in inculcating a high tone of professional ethics and action.

PRIOR READING IN LAW.

The Faculty are frequently applied to by letter for advice upon the question whether it is desirable to enter upon the study of law, and acquire some general knowledge of the principles, before admission to this Department. It is somewhat difficult to lay down rules that can be advantageously applied in all cases, but the Faculty are of the opinion that, for the first year at least, more positive benefit is received from lectures, and more positive advancement in law made, by students who, before coming, have read at least the Commentaries of Blackstone, than by those who are beginners here. But the Faculty are aware of the great difficulty experienced by the student in giving proper direction to his reading and investigation at the beginning; and they do not therefore make it a condition of admission that there shall be any prior reading whatever in law. The want of such reading will, doubtless, in many cases, be fully compensated in the aid the beginner may receive here in the outset. It is not often that the student receives the needed

assistance except in law schools. The active practitioner, engrossed with the cares of business, cannot—or at least, as proved by experience, does not—furnish the students who place themselves in his charge the attention and assistance essential to give a correct direction to their reading, and to teach them to apply it usefully and aptly in their subsequent professional life. The reading of a student in a law office is practically the study of law by himself, and without assistance; and he neither acquires that familiarity with books and that facility of reference which it is the aim of this Department to assist him in acquiring, nor learns anything of the practical application of legal principles beyond what he may pick up from observation of the practice of his preceptor.

SPECIAL STUDENTS.

As students come to the University who have been reading law for a considerable period before making application for admission to the Department of Law, but whose reading has not been sufficiently extensive to bring them within the rule for admission to the senior class, it has been thought best to allow such students to become special students, with the privilege of pursuing a select course of study. They are allowed, under the guidance of the Faculty, to select subjects from the courses of both years.

THE LAW LIBRARY.

The Law Library contains 9,783 volumes, including the reports of every State in the Union, the reports of the Federal courts, as well as a very excellent collection of the English, Irish, and Canadian reports. In addition to the reports is an extensive collection of treatises on American and English law, and copies of the statutes of the several States and of the United States. By yearly additions the effort is to keep the library supplied with new reports as they are issued, and in this way to make it as good a working library for students as could be desired. The library is open for consultation by students from 8 o'clock a. m. to 12 m., and from 1:30 p. m. to 5:30 p. m., as well as from 7 p. m. to 9 p. m., during the academic year. The library is closed on Saturday afternoons and evenings. Students are not

permitted to take the books from the library building, but during the hours named are allowed free access to them.

The Honorable C. H. Buhl, of Detroit, has presented to the Law Department of the University what is known as the "Buhl Law Library," consisting of 5,000 volumes of reports and text-books. This generous gift has made the Law Library a most excellent one in which to pursue an extended study of jurisprudence.

The Library was also enriched some years ago by the gift of the valuable law library of the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts.

The Journal of Jurisprudence (Edinburgh), the Law Quarterly Review (London), the American Law Review, the American Law Register, the Criminal Law Magazine, the Albany Law Journal, the Central Law Journal, and the Federal Reporter, are regularly taken and kept on file.

Students of the Department of Law are also allowed the use of the General Library of the University, which contains 53,837 volumes, and 12,776 unbound pamphlets. See page 17.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Text-books and books of reference are very numerous, and students will find the professors ready to lend them aid in making proper selections. While several copies of each of the leading text-books will be found in the library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. They will find that it will greatly facilitate their studies to have at hand at all times such of the leading text-books as treat of the more important branches of law. By so doing no loss will be incurred, as the books will be found essential in subsequent practice. But the only books students are required to provide themselves with are those already named as being used for purposes of text-book instruction.

The books mentioned in the following list may be used to advantage upon the subjects named. As a general thing any one of those mentioned in each department will answer the

necessities of the student, and, whenever a preference exists, it is given to the one first in order on the list. But in the department of constitutional history all the writers named may be read, or consulted, as for the most part covering different periods of time.

Constitutional History.—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1860); Stubbs's Constitutional History of England; Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

Constitutional and Statute Law.—Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Dicey's Law of the Constitution (of England); Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Convention; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

Jurisprudence.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law.—Wheaton's Elements of International Law; Phillimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

Roman Law.—Morey's Outlines of Roman Law; Hadley's Introduction to Roman Law; Mackeldey's Roman Law; Mackenzie's Roman Law.

Contracts.—Parsons; Anson; Metcalf; Pollock; Bishop.

Bailments.—Schouler; Edwards; Story.

Sales.—Benjamin.

Domestic Relations.—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonell on Master and Servant; Simpson on Infants.

Corporations.—Angell and Ames; Field; Morawetz; Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes.—Byles; Chalmers; Parsons; Daniels on Negotiable Instruments.

Torts.—Cooley; Bigelow; Addison.

Evidence.—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton, or Starkie, on Evidence; Rogers on Expert Testimony.

Real Property.—Williams; Washburn; Tiedeman; Boone.

Partnership.—Lindley; Parsons.

Wills and Administration of Estates.—Jarman on Wills (Randolph & Talcott, or Bigelow's edition); Redfield on Wills; Hawkins on Construction of Wills; Williams on Executors.

Common Carriers.—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

Equity.—Pomeroy's or Story's Equity Jurisprudence; Snell's, Bisham's, or Adams's Equity.

Criminal Law.—Bishop; Wharton; Harris; May; Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading.—Stephen; Gould; Chitty; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency.—Evans; Story; Wharton.

Damages.—Sutherland.

Mortgages.—Jones.

Insurance.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

Shipping and Admiralty.—Parsons; Machlachlan; Abbott; Desty.

Easements.—Goddard; Washburn.

Taxation.—Cooley; Burroughs; Desty.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

The matriculation fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual fee is paid at the beginning of the first year, and of every subsequent year of attendance. For other details of expenses, see pages 28 and 29.

Those who desire any further information concerning this Department, may address letters of inquiry to the Dean of the Department of Law, Ann Arbor, Michigan.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

School of Pharmacy.

This School is organized to give training for service in dispensing pharmacy. It furnishes preparation for the practice of the pharmacist, the general analyst, the manufacturing chemist, and the wholesale druggist. Attention is given to sanitary chemistry, and exercises are required upon adulterations of food as well as medicines. The graduate is qualified for responsibility as the chemist of the medical profession, and of the community. The course also affords a favorable means of mental discipline by systematic work in exact science. Of the laboratories of the University, the chemical, pharmaceutical, and the microscopical laboratories are in constant use by the classes of this school. See pages 24 and 25.

The college year begins October 1, for all students; and closes the last week in June. Students of the first year are released June 14. Admission is not granted at any other time than at the opening of the college year, as students are instructed in classes in progressive order. It is especially difficult to make up for absence in the first week.

REQUIREMENTS FOR ADMISSION.

All applicants for admission must be at least eighteen years of age.

It is advisory to obtain at least a year of practical training in a drug store before entering the college course in pharmacy. The required work in the School leaves the student no time for an engagement in a drug store during the college year.

Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of collegiate grade, are admitted without examination.

Persons over nineteen years of age, who bring evidence of having been engaged in the practice of pharmacy, in some ca-

capacity, for at least two years, may be admitted (for a part or the whole of the course) without other examination; but they shall not be eligible for graduation until they have passed the entrance examination described in the following paragraph.

Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following branches:

1. **ENGLISH.**—Each candidate will be examined in the writing of English, correct in orthography, punctuation, the use of capitals, and grammatical construction; in the forms of correspondence; and in the correction of errors.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures. *Algebra.*—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

3. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book. Instead of Latin, German to the extent of a full year's study will be accepted. Those who have a speaking and reading acquaintance with German will be held to an examination in the grammar.

Other applicants will be examined in the following branches:

1. **ENGLISH.**—The same as given above.

2. **MATHEMATICS.**—*Arithmetic.*—The same as given above. *Algebra.*—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, and the use of Logarithms.

3. **LATIN OR GERMAN.**—The applicant may offer (1) three years of preparation in Latin; or (2) two years in Latin and one year in German; or (3) one year in Latin and two years in German. Those who offer three years in Latin will be examined in the *Grammar*—a thorough preparation in the elements; in *Prose Composition*—Jones's Exercises in Latin Prose Composition, or an equivalent in some other text-book; and in *Reading*—four books of Cæsar's Commentaries, and six select Orations of Cicero, or an equivalent amount in some other text-book. Those who offer two years of Latin will be examined as above, except in the Orations of Cicero. Those who offer one year of Latin will be examined on an amount equivalent to Jones's First Latin Book. Those who offer one year of German should have had daily recitations on the Grammar during that time, accompanied by weekly exercises in writing, and the reading of seventy-five pages of some German Reader. Those who offer two years of German

should have devoted one year to the reading of some complete work of literary art.

4. **PHYSICS.**—Norton's Natural Philosophy, or an equivalent.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in the first twenty-seven chapters of Gray's Lessons, or the First and Second Parts of Wood's Class-Book of Botany; also, an analysis and written description of fifty species of phanerogams.

TIMES OF EXAMINATIONS.

An examination for admission will be held on Friday and Saturday, June 14 and 15, 1889, and another on Friday and Saturday, September 27 and 28. The examination will begin in each case at 9 A. M., on the first of the two days mentioned. Candidates may take their examination at either of these times, as they prefer.

COURSES OF INSTRUCTION.

STUDIES OF THE FIRST YEAR.

1. *Pharmacy.*—History of pharmacopœias; metrology and chemical problems; operative pharmacy and its physical principles; the galenical preparations; official standards and purity; heat and its uses.

2. *Chemical Physics and Inorganic Chemistry.*—Recitations from text-book and lectures with experimental illustrations.

3. *Pharmacognosy and Systematic Botany.*—With fresh plants, and with crude drugs and other articles of pharmaceutical commerce, inorganic and organic, studied in the hands of the student.

4. *Sanitary Science.*—Physiological action of foods and of medicines; supply of water and air; defences against contagions; duties of health officers.

5. *Qualitative Chemical Analysis.*—Preparatory work on chemical notation, solubilities, formation of compounds, and chemical equations. A series of analyses, and the study of oxidation and reduction with a notation by negative and positive bonds.

6. *Pharmacopœial Preparations.*—The minor operations of pharmacy; production of the galenicals, solid and fluid extracts, and scale preparations; chemicals and distillations; extemporaneous pharmacy.

STUDIES OF THE SECOND YEAR.

7. *Materia Medica.*—Medicines, their classification, history, physiological effect, and doses. Prescription writing, language, and latinity; prescription reading from actual files of the pharmacy.

8. *Practical Pharmacognosy.*—Recognition of crude drugs, chemicals, and preparations, in the hands of the student.

9. *Microscopical Botany*.—Structural botany of drugs, with drawings from the microscope by the student; identification of powders; detection of adulterations.

10. *Crystallography*.—Systematic crystallography applied to the recognition of chemicals.

11. *Organic Chemistry*.—The systematic chemistry of the carbon compounds, with experimental illustrations.

12. *Quantitative Chemical Analysis*.—(1) Specific gravity; (2) volumetric determinations; (3) gravimetric determinations; (4) gravimetric separations; (5) water analysis.

13. *Proximate Organic Analysis*.—Tests of identity; methods of separation; analysis of "secret medicines;" drug assays; valuation of foods; toxicology and analyses for evidences of poisoning.

14. *Pharmacy*.—Of inorganic and organic materials, in commercial sources, manufacture, uses, tests, and standards of strength and purity.

15. *Analysis of Urine*.—Normal and abnormal, by chemical, microscopical, and volumetric methods. Physiological and pathological indications.

HOURS OF COLLEGE WORK.

FIRST YEAR—FIRST SEMESTER.

HOURS.

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|------------|-----------|---------------------------|-----------------------|
| 8¼ to 9¼ | Course 5. | Recitations and lectures. | Daily. |
| 9½ to 10½ | Course 1. | Lectures and recitations. | Daily. |
| 10½ to 11¼ | Course 3. | Wednesday and Friday. | |
| 10½ to 11¼ | Course 4. | Lectures. | Tuesday and Thursday. |
| 1 to 5 | Course 5. | Laboratory. | Daily. |

SECOND SEMESTER.

(From beginning of semester to the last of March.)

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|------------|-----------|---------------------------|--------------------------------|
| 8¼ to 9¼ | Course 6. | Recitations. | Monday, Wednesday, and Friday. |
| 9½ to 10½ | Course 5. | Lectures and recitations. | Daily. |
| 10½ to 11¼ | Course 3. | Wednesday and Friday. | |
| to 5 | Course 5. | Laboratory. | Daily. |
| to 6 | Course 2. | Recitations. | Monday, Wednesday, and Friday. |

(From the last of March to end of semester.)

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|------------|-----------|---|---------------------------------------|
| 10½ to 11¼ | Course 3. | Lectures and practical study in botany. | Monday, Wednesday, and Friday. |
| 10½ to 12½ | Course 3. | Laboratory. | Tuesday and Thursday. (Two sections.) |
| 11¼ to 12½ | Course 6. | Lectures and recitations. | Monday, Wednesday, and Friday. |
| 1 to 5 | Course 6. | Laboratory. | Daily. |
| 5 to 6 | Course 2. | Recitations. | Monday, Wednesday, and Friday. |

SECOND YEAR—FIRST SEMESTER.

(From beginning of semester to Christmas vacation.)

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|------------|------------|-------------------------------|--------------------------------------|
| 8¼ to 11¼ | Course 9. | Laboratory. | Three times a week. |
| 9½ to 10½ | Course 9. | Lecture. | Friday. |
| 10½ to 11¼ | Course 11. | Lectures. | Monday, Wednesday, and Friday. |
| 10½ to 12½ | Course 10. | Lectures and practical study. | Tuesday and Thursday. (Seven weeks.) |

- 11½ to 12½ Course 12. Lectures and recitations. Wednesday and Friday.
 1 to 5 Course 12. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

(From Christmas vacation to end of semester.)

- 8¼ to 11½ Course 9. Laboratory. Three times a week.
 9½ to 10½ Course 9. Lecture. Friday.
 10½ to 11½ Course 11. Lectures. Monday, Wednesday, and Friday.
 2 to 3 Course 15. Lectures. Monday, Wednesday, and Friday.
 1 to 5 Course 15. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

SECOND SEMESTER.

(From beginning of semester to the last of March.)

- 8¼ to 10½ Course 8. Lessons in museum. Tuesday and Thursday. (Two sections.)
 8¼ to 10½ Thesis. Reading in library. Monday, Wednesday, and Friday.
 10½ to 11½ Course 13. Lectures. Tuesday and Thursday.
 10½ to 11½ Course 14. Lectures and recitations. Monday, Wednesday, and Friday.
 1 to 5 Course 13. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

(From the last of March to end of semester.)

- 8¼ to 9¼ Course 8. In museum.
 9½ to 10½ Course 14. Lectures and recitations. Daily.
 10½ to 11½ Course 13. Lectures. Three times a week.
 11½ to 12½ Thesis. Reading in library. Daily.
 1 to 6 { Course 13. } Laboratory. Daily.
 { Thesis. }

EXAMINATIONS.

In each of the courses of instruction enumerated (1 to 15) examination is held at the time the work of the course is completed by the class. For the studies of the first year the principal examinations are held in February or March, and in June. For the second year, examinations are held in December, in February, in March, in May, and in June.

After the examination concluding any course of study, the result is reported to the Faculty, and each student enrolled in the class is recorded as being Passed, Conditionally Passed, Provisionally Passed, Not Passed, or Absent, and he receives a corresponding certificate. The record is by no means based wholly upon the examination, but upon (1) standing in recitations through the course, (2) diligence and success in the laboratory work, and (3) standing in the examination. If "Passed" the student receives credit for the completion of the study reported upon. If "Conditionally Passed," he must make up the condition imposed. A record of "Not Passed" requires the stu-

dent to go over the regular exercises of the study again. A student "Provisionally Passed" is transferred from the immediate charge of the instructor to that of the Faculty, who will withhold credit until better scholarship is attained in other studies. A record of Provisionally Passed may be changed by the Faculty to a record of Passed, Conditionally Passed, or Not Passed, whenever such change shall be justified by the scholarship of the student in his studies in the school. Whenever the Faculty is satisfied that a student does not fulfil the purpose of his studies, he is informed, and his parents or guardians are advised that he should leave the school. If the advice be not regarded it becomes the duty of the Faculty to take mandatory action.

REQUIREMENTS FOR GRADUATION.

The degree of Pharmaceutical Chemist is conferred upon students who have completed the courses of required study, have obtained credit for examinations in these courses in the manner above stated, and have presented a satisfactory thesis.

The thesis must embody the results of research by the student under the direction of the Faculty. The subject is to be selected as early as the first of March. The investigations may consist in the determination of constants of nature, the correction of chemical formulæ and reactions, chemical and microbotanical analysis of plants, the trial of methods of analysis or manufacture, the exposure of adulterations and concealed constituents, the collection of a cabinet, the compilation of a bibliographic index, or research in any branch of pharmaceutical chemistry. A comparison of authorities must be made, and the references given.

Experience in the business of pharmacy is not made a requirement for a degree. A year of pharmaceutical experience after college is worth several years of the same before college. But until experience be obtained, the graduate in pharmacy is not fully ready for responsible service in commercial practice.

POST-GRADUATE STUDIES AND A HIGHER DEGREE.

Extended facilities for advanced studies under instruction are given to graduates who take an additional year in the school.

These facilities are adapted to preparation for service in manufacturing chemistry and pharmacy, or in any branch of analytical chemistry. The student elects such laboratory courses and other studies as will be most helpful to him in responsibilities for which he desires to be qualified. Additional study in the Department of Literature, Science, and the Arts may be elected, if the Faculty find such elective work advisory. (See pages 57-59 for the courses in analytical and organic chemistry given in that department.) The following are among the available courses open to graduates :

1. *Quantitative Analysis*.—Advanced quantitative work in any direction. Iron and steel analysis, valuation of fertilizers, mineral waters, brines, etc.

2. *Organic Analysis*.—Proximate analysis, detection of adulterations, assays of drugs, valuation of foods, sanitary chemistry,—laboratory work and reading in the library. Ultimate organic analysis and preparations,—an organized course.

3. *Purification of Chemicals*.—An organized course of laboratory work, furnishing pure chemicals for use.

4. *Physiological Chemistry*.—A laboratory course. *Pharmacology*.—Experimental work.

5. *Assaying of Ores*.—A course in class. Blow-pipe analysis of minerals,—a defined course. *Metallurgy*.—Lectures.

6. *Experimental Researches*.—In manufacturing invention; in analytical methods; in the pure sciences. Bibliography of pharmaceutical chemistry.

A second degree is offered to resident graduates of this School upon the following requirements, viz., the accomplishment of original research, of an extent representing the average work of a full college year, and of sufficient ability and faithfulness. Applications are accepted by the Faculty from those who have already shown that they are adapted to engage successfully in investigations. A full record of the work, with citation of authorities, in form for publication, is required. Upon completion of the requirements, the degree of Master of Pharmacy is conferred.

TEXT-BOOKS AND BOOKS OF REFERENCE.

TEXT-BOOKS.

First Year.—In General Chemistry, Richter's Inorganic, and Deschanel's Physics. The work of Roscoe and Schorlemmer is advised for

reference. In Qualitative Analysis, Prescott and Johnson. In Pharmacy, the U. S. Pharmacopœia and Heebner's Manual. In Botany, Gray's Lessons and Manual. In Pharmacognosy, Maisch's Organic Materia Medica. It is very desirable to have either the National Dispensatory, or the United States Dispensatory.

Second Year.—In Materia Medica, Farquarson. On Prescription Writing, Gerrish. In Quantitative Analysis, Cheever's Select Methods, or other work of reference. In Organic Chemistry, Remsen. In Organic Analysis, Prescott. In Physiological Chemistry, Vaughan. Lyon's Pharmaceutical Assaying is advised.

Students who study in the same room may unite in the use of the dispensatory, and the works on general chemistry and chemical physics.

BOOKS OF REFERENCE.

These are provided in the General Library of the University, which embraces the library of the School of Pharmacy. All the important repositories of chemistry and pharmacy, including the principal periodicals in complete sets, and the latest works of reference, are accessible to the student, and are in use for original research. During the second semester, students have direct access to an alcove supplied with about seven hundred volumes of pharmaceutical literature, and other works can be obtained from the book-room by calling for them.

FEES AND EXPENSES.

For full information in regard to University fees and other expenses see pages 28 and 29.

Letters of inquiry may be addressed to the Dean of the School of Pharmacy, Ann Arbor, Michigan. A register of residences and occupations of the alumni, constituting a full professional directory, revised each year, is given in the special Annual Announcement of the School, which can be obtained on application to the Dean.

Homœopathic Medical College.

By an act of the Legislature in 1875 the Homœopathic Medical College was established as a Department of the University. The friends of homœopathy everywhere will be gratified to know that since the establishment of the College wise and liberal provisions have been made by successive legislatures for its maintenance and success. The object sought to be fulfilled by its establishment, namely, the thorough instruction of students in all subjects which pertain to medical science and art, and especially to the principles and art of homœopathy, has, it is believed, been satisfactorily accomplished. The progress of the College has been uninterrupted, as is shown by the fact that the number of matriculates has been steadily increasing. The Faculty ask for the cordial support of the medical profession, and earnestly invite the attention of medical students to the inducements here held out.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be at least eighteen years of age, must present to the Faculty satisfactory evidence of a good moral character, and must have sufficient primary education to make good use of the advantages offered. To the end, students who are graduates of some accredited college, academy, or high school, or who possess a teacher's certificate qualifying them to teach in the common schools of the State in which they reside, will be admitted to this College upon presentation of such certificate to the Secretary of the Faculty. Those not presenting such certificates must submit to an examination in writing, in the branches of a common-school English education.

ADMISSION OF WOMEN.

Women are admitted to this College, as to all other departments of the University, on the same conditions as men.

MATRICULATION EXAMINATION.

Examinations will be held at 2 P. M., on Saturday and Monday, September 28 and 30, 1889. Candidates are required to present themselves on one of these days, and they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for candidates to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty; but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination. Certificates of time are given only for the actual period of attendance.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine at some other accredited medical college for at least one college year, and who possess the proper qualifications, may be admitted, on examination, to advanced standing, and may attend such lectures and studies as shall be designated for their special course. After the present year, 1888-'89, in conformity with a resolution adopted in 1888 by the American Institute of Homœopathy, three college courses will be in all cases required for graduation. The student is, therefore, most earnestly advised, to spend the whole three years in this College, pursuing systematically the regular graded course.

Students who have attended lectures in medical colleges in which homœopathic materia medica and therapeutics are not

taught, and who wish to enter this College with a view of taking its degree, are not admitted to advanced standing without first giving evidence of possessing the requisite acquaintance with homœopathic materia medica and therapeutics.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and according to the class they are to enter; and each student is expected to occupy, during the session, the seat selected. In the advanced lectures the graduating class, by courtesy, are allowed the privilege of the seats nearest the operating table and lecture desk. The same rule applies to the selection of seats in the Department of Medicine and Surgery.

COURSE OF INSTRUCTION.

SURGERY.—A complete course of lectures is given to freshmen on minor surgery and bandaging.

The senior and junior classes are combined, and listen to a complete course of lectures on operative surgery, fractures, and dislocations, and on the principles of surgery.

Candidates for graduation are required to demonstrate their knowledge of operative surgery by operations on the cadaver, a requisite number being provided by the authorities without expense to the class.

The chair of surgery has an assistant, under whose direction students are allowed to make the necessary preparations for operations and to assist, when assistance is required. Advanced students are also allowed to treat patients operated upon under the immediate supervision of the surgeon in charge.

MATERIA MEDICA.—The course in Materia Medica and Therapeutics embraces the study of the toxic and physiological action of remedies, of experiments made upon the healthy, and a careful study of symptomatology. Every effort is made to present in its entirety each drug discussed, and to convey to the student a clear apprehension of its individuality. Drug provings, critical analyses of provings made, and inquiries into the relative merits of different methods of instituting drug provings are also

provided for. Provings upon the healthy are made by members of the class, under the instruction of the professor of *materia medica*.

The regular course consists of 108 lectures, so arranged that the classes, while listening to the same lectures, do separate work. The freshmen take a course of thirty-six hours in pharmacy, chiefly practical, in charge of the assistant to the chair of *materia medica*. The different classes are quizzed by the assistant, at least once a week, upon the lectures heard during the preceding week, and each class is examined in writing at the close of each semester.

OBSTETRICS, GYNÆCOLOGY, AND PÆDOLOGY.—The course of study in these several branches is so arranged that separate lectures are given to the several classes in accordance with the graded course outlined by the Faculty. Thus the members of the first-year class are drilled in the fundamental branches of gynæcology, being taught the use of instruments, the various methods of making gynæcological examinations, etc. During the second year the student enters upon both didactic and clinical work. Special lectures are delivered to the senior class upon special subjects. Thus the student during the three-years course goes over part of the same subject-matter twice. Clinical material in this department is abundant, the close proximity of Ann Arbor to Detroit making it possible to secure the necessary material at a comparatively low cost.

OPHTHALMOLOGY AND OTOTOLOGY.—Regular lectures on these important specialties are given during the term, amply illustrated from the abundance of clinical material at the disposal of the Faculty. The eye-and-ear clinic has assumed sufficiently large proportions to form one of the most interesting features of the clinical work, and to afford the class every facility for a thorough practical study of all the diseases of the eye and ear which come under the observation of the physician.

THEORY AND PRACTICE OF MEDICINE.—The course in Theory and Practice embodies a thorough discussion of the general subjects belonging to this chair, of the principles underlying homœopathic practice, and of their practical application. Due at-

tention is given to pathology, diagnosis, and the divisions of the science of medicine. No pains are spared to make the student thoroughly familiar with homœopathic practice, and with the latest advances made in medicine.

The lectures are fully illustrated by the medical clinic, which is further utilized for giving special instruction in physical diagnosis and in the use of the various diagnostic instruments now in vogue. Cases in the hospital are assigned, from time to time, to the care of members of the senior class, thus affording them abundant opportunities for gaining bedside experience in the diagnosis and treatment of disease.

INSTITUTES OF HOMŒOPATHY.—In order to furnish thorough instruction in the distinctive features of homœopathic teaching and practice, a full course of lectures on the Institutes of Homœopathy is given by the professor of materia medica. These lectures consist of a careful study of the *Organon* of Samuel Hahnemann, and of the principles of homœopathy as recognized by the authorities. Past experience has shown that this course is both practicable and valuable, and it is now made obligatory on all classes.

SPECIAL COURSES.—Two special courses have been established, one in physiological and pathological chemistry, and another in toxicology. The first embraces analysis of the blood; urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in qualitative and quantitative analysis, and the special examination of foods, and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and cooperation. Courses in quantitative analysis and in pharmaceutical preparations are also open to students of medicine who may desire such special training.

The students of the Homœopathic Medical College receive instruction in all branches not therein provided for from the re-

spective professors in the Department of Medicine and Surgery, and, in those branches, are subjected to the same rules, regulations, and examinations, as the students of that department.

Lectures are delivered daily; and frequent examinations by the assistants to the several chairs are held. The surgical, medical, and gynæcological clinics are held twice a week, at which times examinations of patients are made by the professors in charge, or by students under the direction of the professors, prescriptions given, and surgical operations performed in the presence of the class. Owing to the abundance of clinical material, the several clinics are held on separate days, of which the profession throughout the State will be duly notified. Unless otherwise announced, the eye-and-ear clinic will be held Friday afternoon; the surgical clinic Thursday and Saturday, afternoons; the general and gynæcological clinics Wednesday and Saturday, forenoons.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and such of the lectures and demonstrations as it is thought by each member of the Faculty not desirable to be presented to the combined classes, are given separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various other class exercises, it is found that both may with propriety be united.

ARRANGEMENT OF STUDIES.

The following schedule shows the arrangement of studies throughout the course of three years:

FIRST YEAR.

Subjects completed the first year.	Minor Surgical Gynæcology.	} In Homœopathic College.
	Minor Surgery.	
	Osteology.	} In Upper Lecture Room.*
	Embryology, Comparative.	
	Physiological Chemistry.	} In Lower Lecture Room.*
	Sanitary Science.	
	Histology and Microscopy.	

* In Department of Medicine and Surgery.

Studies taken the first year and continued through the second year.	Anatomy, Descriptive.	} In Upper Lecture Room.*
	Physiology.	
	Materia Medica.	In Homœopathic College.
	General Chemistry.	In Lower Lecture Room.*

Practical work that should be completed the first year.	Practical Histology.	} In the Histological Laboratory in sections of twenty. Fifteen lessons of afternoon work, one lesson each week. Two sections yearly, beginning in October and in February.
	Qualitative Chemistry.	
		} In the Chemical Laboratory, requiring twelve weeks of afternoon work. Classes begin the first week in October, the first week in January, and the last week in March.

Practical Anatomy.	{ Each dissection requires eight to ten weeks of afternoon work in the Anatomical Laboratory. There are two sections yearly, beginning in October, and in January. Some students may be able to complete one dissection in their first year.	
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SECOND YEAR.

Subjects completed the second year.	*Anatomy, Descriptive.
	*Physiology.
	*General Chemistry.
	Medical Jurisprudence.

Subjects taken the second year and continued through the third year.	Theory and Practice of Medicine.	} In Homœopathic College.
	Surgery.	
	Obstetrics and Gynecology.	
	Materia Medica.	

Practical work that should be completed the second year.	Practical Anatomy.	In Anatomical Laboratory.
	Analysis of Urine.	In Chemical Laboratory.
Optional Courses.	Practical Physiology.	In Physiological Laboratory.
	Electro-Therapeutics.	} In Chemical Laboratory.
	Organic Chemistry.	
	Advanced Histology.	In Histological Laboratory.

* In Department of Medicine and Surgery.

THIRD YEAR.

Subjects completed the third year.	{	Materia Medica.
		Theory and Practice of Medicine.
		Surgery.
		Obstetrics, Gynæcology, and Pædology.
		Pathology.
		All Special courses, as Ophthalmology, Diseases of the Nervous System, Surgical Anatomy, Diseases of Women and Children, Sanitary Science, Minor Surgery, Physical Diagnosis, Diseases of the Skin, etc., etc.
Practical work.		Practical Pathology. In Pathological Laboratory.

EXAMINATIONS.

At the end of each semester, examinations are held by the several professors, or their assistants, on all subjects previously taught, and the grade of each student is entered upon the records of the Faculty. Each student who does not come up to the required standard is notified of his failure, and opportunity is given him to prepare for a second examination upon the subjects wherein he has failed, in order that he may enter upon the advanced studies of the next semester.

The final examinations are conducted, in part at least, in writing.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have successfully pursued the study of medicine in some accredited college for the period of three years, the last of which must have been in this College. He must have attended at least seventy-five per cent. of the regular lectures, must have spent the required time in practical anatomy, chemical analysis, etc., in the various laboratories and hospitals, and must have attended the usual quizzes and drills by the assistants of the several chairs. He must also have passed satisfactory examinations on all the studies included in the curriculum.

Students who have completed full college courses for the first and second years in an accredited medical college will be permitted, upon examination, to enter the third year and com-

plete the studies of that year in this College, and to present themselves for examination for the degree at the end of the year.

All candidates for graduation must present to the Secretary time-certificates from the Secretary of the Faculty of the Department of Medicine and Surgery, showing what lectures they have attended in that department.

SPECIAL FACILITIES FOR INSTRUCTION.

The unsurpassed facilities offered by the University of Michigan for thorough study and for original work in various directions are in themselves worthy the serious consideration of all medical students.

The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, and pathology. The facilities for the study of chemistry, afforded by the chemical laboratory, are not excelled in any medical college in this country, and the arrangements of the laboratory work are such that medical students, in classes, and working under the direction of the professor in charge, receive practical instruction in the courses on qualitative chemistry, and in the analysis of urine, a knowledge of which has become absolutely indispensable to the successful physician. The histological laboratory, with its collection of microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and in histology. The new hygienic and anatomical laboratories, just erected and open to all students of the University, are models of beauty and convenience, affording facilities for instruction in hygiene and in practical anatomy, unsurpassed, if equalled, by those of any other institution of learning in the United States. In addition to these, students have free access to the general and special cabinets of the University, containing about 255,000 specimens. The scientific and philosophical lectures, collateral to medicine, given in the Department of Literature, Science, and the Arts, are also open to them.

The Homœopathic College, in addition, possesses the valu-

able collection of anatomical and pathological specimens presented to it by Dr. J. N. Eckel, of San Francisco, Cal., and Dr. A. I. Sawyer, of Monroe, Mich.; these, already comprising much valuable material, are constantly growing in importance through contributions from friends of this institution.

The lecture room and amphitheatre are arranged conveniently, have ample seating capacity, and embody the conveniences and necessities which are essential points to the teacher and students.

The Hospital is in charge of a competent resident medical officer and an experienced matron; it is provided with a corps of trained nurses, wards for male and female patients, special rooms for antiseptic surgery, dispensary, etc., all of these under the immediate direction of the Faculty, the members of which attend upon the sick in the hospital, and draw from them the material for the clinical instruction of the class.

The clinical advantages offered are more than ample to meet the demands of any school. Although not placed in the midst of a populous city, the College has had no difficulty in securing all the clinical material which could be utilized, embracing almost every pathological condition likely to occur in daily practice, and a great variety of rare cases and of surgical operations of unusual importance.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Any one of the following text-books in each department will answer the necessities of the student; and, wherever a preference exists, it is given to the one first in order on the list.

ANATOMY.—Gray; Quain; Ford's Questions; Wilson; Leidy; Darling; Stricker.

PHYSIOLOGY.—Martin; Foster; Landois and Stirling; Flint; Kirkes.

CHEMISTRY.—*General Chemistry.*—Miller's Chemical Physics; Miller's Inorganic Chemistry; Bloxam's Chemistry; Fownes's Chemistry; Remsen's Organic Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry.

MATERIA MEDICA AND THERAPEUTICS.—Hahnemann's *Materia Medica Pura* (translated by R. E. Dudgeon, M. D.); Dunham's Lectures; Hempel and Arndt's *Materia Medica and Therapeutics*.

PHARMACY.—O'Connor's *American Homœopathic Pharmacopœia*.

INSTITUTES OF HOMŒOPATHY.—Hahnemann's Organon (Wesselhoeft's translation).

BOTANY.—Gray's Manual.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Ziegler; Wagner; Green; Paget; Williams's Principles. *For Reference.*—Rokitansky; Virchow.

DISEASES OF WOMEN.—Ludlam; Southwick; Emmet; Hart and Barbour; Byford; Goodell.

OBSTETRICS.—Guernsey; Leavitt; Lusk; Parvin; Galabin; Playfair. *For Reference.*—Cazeaux and Tarnier.

DISEASES OF CHILDREN.—Hartmann; Teste; Eustace Smith; Edmunds. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; West on the Nervous Diseases of Childhood; Routh on Infant Feeding.

THEORY AND PRACTICE.—Arndt's System of Medicine; Raue; Dickinson; Hughes; Lilienthal; Bæhr's Therapeutics; Da Costa on Medical Diagnosis; Clapp on Auscultation and Percussion; Loomis on Physical Diagnosis; Bulkley's Hand-book of Skin Diseases.

SURGERY.—Helmuth; Gilchrist; Hamilton; Erichsen. *Special Subjects.*—Hamilton on Fractures and Dislocations; Keyes on Venereal Diseases; Sayre on Club Foot; Otis on the Genito-Urinary Diseases; Ranney on Surgical Diagnosis. *Minor Surgery and Surgical Appliances.*—Wales; Hamilton; Heath.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler; Norton; Wolfe; Buffum; Sælberg Wells; Dewecker; Alt. *On the Ear.*—Politzer; Winslow; Roosa; Burnett; Sterling.

URINARY PHYSIOLOGY AND PATHOLOGY.—Vaughan; Hassall; Beale; Parkes; Thudichum; Neubauer; Vogel.

HISTOLOGY.—Stowell's Manual; Schæfer; Klein; Stricker.

PHYSIOLOGICAL CHEMISTRY.—Brunton's Handbook for the Physiological Laboratory; Thudichum's Manual of Chemical Physiology. *For Reference.*—Lehmann's Physiological Chemistry.

ELECTRO-THERAPEUTICS AND ELECTRO-SURGERY.—Beard and Rockwell; Butler.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents. The Matriculation Fee is paid but once, and entitles the student to the privileges of permanent membership in the University.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *ten dollars* an extremity is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological and pathological laboratories. A charge of *one dollar* is made to students who take the course in electro-therapeutics.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this College, be permitted such attendance on the payment of the matriculation fee only.

TABLE OF FEES.

College Fees, first year	For Michigan Students, \$	35	For all others, \$	60
“ “ second year ----	“ “ “	25	“ “ “	35
“ “ third year	“ “ “	25	“ “ “	35
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Total Fees for three years....	“ “ “	\$ 85	“ “ “	\$ 130
Diploma Fee	“ “ “	10	“ “ “	10
Material for Dissection.....	“ “ “	20	“ “ “	20
Laboratory Expenses.....	“ “ “	about 24	“ “ “	about 24

For additional information in regard to expenses, see pages 28 and 29.

All letters of inquiry should be addressed to Dr. James C. Wood, Secretary of the Homœopathic Medical College, Ann Arbor, Michigan.

Students arriving at Ann Arbor, and desiring further information, should apply at the office of the Faculty, in the Homœopathic Hospital, North University Avenue. The office will be open daily during the last week in September, and members of the Faculty or the Resident Surgeon will be in attendance. The office hours of the Dean are from 9 to 11 a. m.; of the Secretary, from 3 to 5 p. m.

College of Dental Surgery.

The fifteenth annual course of instruction in the College of Dental Surgery will begin October 1, 1889, and will continue till the last part of June, 1890. There will be a Thanksgiving recess of three days, beginning on Tuesday evening before Thanksgiving; a holiday vacation from the evening of December 20, 1889, to the evening of January 6, 1890; and a spring recess from the evening of April 11, to the evening of April 21, 1890. The lectures will continue to June 20, 1890.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, and present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the University, or a graduate of some recognized college, academy, or high school, every candidate must be examined as to his previous education and his fitness to enter upon the technical study of dentistry. The examination will be chiefly in writing, and will embrace the usual branches of an English education. In order to secure release from this examination, the candidate must present his diploma or certificate of graduation. It is also strongly recommended that the applicant devote at least one year to the study of Latin, and acquire the ability to read the first two books of Cæsar; or possess such a knowledge of the German language as can be secured by one year's study under good instruction. The above named preparation in Latin or in German may be made a requirement at an early date.

The examination will be held in Ann Arbor on Monday, Sept. 30, 1889, at 2 p. m. Candidates are expected to be present at that time. To provide for cases in which it is impossible for the applicant to be present, examinations will also be held at such other times as may be determined by the Faculty.

Before admission to examination every student is required to present to the Dean of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in this College, and pay his fee to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Arrangements have also been made, whereby admission examinations are conducted at any time designated by the examiners, between June 1 and September 20, of each year, at the places and by the persons named below.

Dr. W. St. Geo. Elliott, No. 29 Upper Brook St., London W., England.

Dr. J. G. Friederichs, No. 155 St. Charles St., New Orleans, La.

Dr. J. G. Templeton, 299 Penn Ave., Pittsburgh, Pa.

Dr. Victor H. Jackson, 6 E. 126th St., New York, N. Y.

Dr. John W. Gale, Canandaigua, N. Y.

Dr. C. T. Stockwell, 327 Main St., Springfield, Mass.

Dr. Alfred W. Hoyt, Chicago, Ill.

Dr. Emor C. St. John, Minneapolis, Minn.

Dr. T. J. Hill, Fargo, Dakota.

In order to receive credit for a full course, students must enter not later than October 15.

Students are allowed to select seats in the lecture rooms and places in the dental laboratory in the order in which they matriculate; and each student is expected to occupy the seat selected during the session.

COURSE OF INSTRUCTION.

In the arrangement of the course of study it is the aim to make it such as will meet the requirements of the student and the expectations of the profession, and secure the greatest benefit to the public. It is generally conceded that graded and progressive work secures the best results in education. To meet the requirements of the constantly increasing demands of dental science, and to accommodate and benefit those students who desire a thorough dental education, the course of instruction has been extended to three full college years, of nine months each, to take effect on and from Oct. 1, 1889. This ex-

tension of the course has been adopted in order that time and opportunity may be had for more systematic and thorough work in all branches of science now taught in dental schools, and in addition the collateral medical and scientific studies made necessary by the rapid progress and high attainments of the science of dentistry; and also that a more satisfactory grading of the classes may be secured.

In the arrangement of the work a successive or graded course of study is combined with repetition of the more important lectures, thus obviating the serious objection of dismissing one part of a connected subject before its relations to other parts can be seen and appreciated, and also avoiding the confusion incident to the presentation at the same time of so many parts of the general subject to the mind of the student at an early period of his studies.

The extended course will afford time for the teaching and study of subjects not generally taught, or but very imperfectly, in many dental schools; and especially will it give more time for thorough work in the laboratories now provided. Though not fully covering the defects of preliminary education, this longer course, accompanied by repeated examinations and written exercises, remedies some deficiencies of earlier training, and is of itself an efficient means of mental discipline, and of literary as well as scientific culture.

The following schedule of studies shows the distribution of the work for the three years:

FIRST YEAR.—Anatomy, Descriptive; Physiology; General Chemistry; Dental Mechanics; Dental Metallurgy.

SECOND YEAR.—Anatomy, Regional and Comparative; Dissections; General Dental Histology; Histological Laboratory; Analytical Chemistry; Theory and Practice of Dentistry; Prosthetic Dentistry.

THIRD YEAR.—Theory and Practice of Dentistry; Clinical Dentistry; Oral Pathology; Surgery and Therapeutics; Special Pathology; Diseases of Women and Children in Relation to Oral Affections.

All students of the first and second years are required to pass an examination on the required branches of their respective courses, before leaving the College at the end of the term. This examination is held between the first and fifteenth of June, each year, and no student who has failed to pass two of

the required branches in his course, at this examination, is admitted to an advanced class during the first semester of the following year. No standing is given or certificate issued to any one who has failed to pass any of these examinations. Certificates of time are given for the actual period of attendance only.

Anatomy, the groundwork of dental science, is studied didactically and practically. A full course on general anatomy is taken with the medical classes in the Department of Medicine and Surgery. Special instruction is also given in the anatomy and histology of all that pertains to the oral apparatus, embracing also particular attention to *comparative* dental anatomy.

In the histological laboratory the principal structures and tissues of the animal body are studied in detail, and special attention is given to their pathology, including the minute study of the new formations. The student not only acquires a knowledge of animal structures and tissues, but becomes familiar with the workings and uses of the microscope.

In view of the important part chemical agents and processes play in the dentist's laboratory and operating room, and the marked influence they have in diseases of the teeth and associated parts, students are required to attend lectures on inorganic and organic chemistry. They also have the advantages of the chemical laboratory, for the practical study of all those agents or secretions that concern their future needs in the prevention and cure of disease. A course in analysis of saliva and of urine is optional to the student.

Knowing how seriously the conditions of maternity often disturb the system, the dental student may take with profit the instruction given in the lectures on gynæcology. The diseases of children, also, as affecting dentition, and as affected by it, should receive special attention.

In the course on the theory and practice of dentistry, the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation as well as restoration to health when diseased, are presented. This instruction applies not only to the various affections of the teeth and contiguous parts, but to the character and application

of remedial agents, and to the various approved methods of operating, with all the details of conditions, materials, instruments, and appliances. The student is required to make his attainments thorough in all these particulars, in order that he may not be at a loss for a guide in his treatment and manipulation.

In clinical dentistry the most thorough practical instruction in details of operations, and in the preparation of instruments and appliances used, is given. The rooms are well arranged, and supplied with operating chairs and other requisite facilities. All valuable appliances will be made available, and instruction in their use given. Each member of the senior class must have a dental engine; and he is required to spend a part of each day in the clinic room.

The instruction in prosthetic dentistry embraces everything necessary to enable the dentist successfully to supply substitutes for lost dental organs. Special reference is had to the principles involved in the restoration of the natural functions of the teeth, viz., mastication, speech, and expression of features, keeping in view always the health and future usefulness of the living parts. Practical and valuable modes only are taught.

Those who have laboratory tools and appliances should bring them; those who have not, are advised to defer purchasing till they arrive in Ann Arbor, as they will then have the aid of the teachers in making proper selections. Each student, before beginning his work, is required to procure the tools and appliances necessary for his own use. A list of these will be furnished him.

Particular attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

REQUIREMENTS FOR GRADUATION.

The candidate for graduation must be twenty-one years of age; must possess a good moral character; must have devoted three years to the study of dentistry, and have made such attainments in all the branches of the course of study, as shall

be satisfactory to the Faculty; and must have attended three full courses of lectures in this College; and we recommend that he attend these consecutively.

One course in any other dental college having an equal or similar standard of requirements to this, will be accepted as an equivalent to one course here. But all applicants offering such an equivalent shall, at the option of the Faculty, submit to an examination.

A graduate of the Department of Medicine and Surgery may enter this College, and, if found qualified, may graduate after two years have been devoted to the study of dentistry, including the courses of lectures.

At least one year's continuous study and work will be required of all candidates for a degree upon a post-graduate course.

Every candidate will be required to write from time to time upon the various branches of his course, and may at the discretion of the Faculty be required to prepare a thesis upon some assigned topic; he must present for inspection practical operations performed by himself in this College, and give satisfactory evidence of his skill and ability in treating the derangements in all the branches taught.

Under the provisions of the "Dentists Act" of Great Britain, graduates of this College, who are not British subjects, are allowed by the General Medical Council to register and to practice dentistry in that country, without further examination.

FACILITIES FOR INSTRUCTION.

The Dental Museum is supplied with a large number of anatomical, physiological, pathological, and histological preparations, including a series illustrating dentition from infancy to the completion of the process in the adult, and the normal changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facilitate the study of the nervous and vascular systems. The design is to make every practicable appliance in this direction available.

In addition to the above, the museum of anatomy and ma-

teria medica is rich in material to aid the student. The museum is always open to students, and the collections are constantly used in illustrating lectures. The museum of natural history, which contains more than 250,000 specimens, is also accessible to all who desire its advantages.

The chemical and histological laboratories are well furnished with all needed apparatus for instruction and research. These laboratories are open through the college year.

The University Library is open daily, and offers its advantages to all who desire to use it. It includes the Medical Library, comprising 3,707 volumes. A library of dental science, containing almost every known work on this specialty, is also accessible to the students.

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the Department of Literature, Science, and the Arts.

TEXT-BOOKS.

ANATOMY.—Gray, Tomes.	PROSTHETIC DENTISTRY.—Richardson.
PHYSIOLOGY.—Martin.	ORAL DEFORMITIES.—Kingsley.
HISTOLOGY.—Stowell.	CHEMISTRY.—Miller, Mitchell.
PATHOLOGY.—Wagner.	PRACTICAL CHEMISTRY.—Prescott.
DENTAL PATHOLOGY.—Wedl.	THERAPEUTICS.—Gorgas, Bartholow.
ORAL SURGERY.—Garretson, Tomes.	MEDICAL DICTIONARY.—Thomas.
OPERATIVE DENTISTRY.—Harris, Taft.	DENTAL DICTIONARY.—Harris.
METALLURGY.—Essig.	

REFERENCE BOOKS.—American System of Dentistry, Watts's Chemical Essays.

FEEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

LABORATORY EXPENSES.—*Chemical Laboratory.*—Students are required to pay for the materials and apparatus actually consumed by them. Experience has shown that the average expense for all courses is about one dollar and twenty cents a week. *Dental Laboratory.*—The expenses for tools for each student are about *thirty dollars*, and for incidentals, gas, teeth, etc., about *fifteen dollars*. These are furnished at the College under the direction of the Faculty.

OTHER EXPENSES.—For further information in regard to fees and expenses, see pages 28 and 29. The average total expenses of a student of dentistry are from two hundred to two hundred and fifty dollars for the college year of nine months.

Those who desire further information concerning the College of Dental Surgery may address Dr. J. Taft, Dean, Ann Arbor, Michigan.

List of Graduates of 1888.

ORDINARY DEGREES.

BACHELOR OF LETTERS.

Carrie Ayers,	James Nathan McBride,
Ida Ayers,	Selby Albert Moran,
Frank Elmer Converse,	Lizzie Herson Northup,
Cora May Chapman,	Carrie Louise Paine,
Thomas Hart Gale,	Clayton Albert Read,
John Hubert Greusel,	Moritz Rosenthal,
Richard Greene Inwood,	Francis Leslie Stevenson,
Alexander Campbell Kiskadden,	John Edward Stillwell,
Jed Hannibal Lee,	Laura Oliver Tupper.

BACHELOR OF SCIENCE.

(IN BIOLOGY.)

Marietta Laughridge Knowles.

BACHELOR OF SCIENCE.

(IN CHEMISTRY.)

John David Riker,	Fred Fraley Sharpless,
Willard Clark Sanford,	George Walton Whyte.

BACHELOR OF SCIENCE.

(IN MINING ENGINEERING.)

Herbert Joseph Stull.

BACHELOR OF SCIENCE.

(IN MECHANICAL ENGINEERING.)

Edwin Hart Ehrman,	Charles Edward Roehl,
Ross LeHunt Mahon,	Ralph Martin Shankland,
William Howie Muir,	Harry John Williams.
Walter Robert Parker,	

BACHELOR OF SCIENCE.

(IN CIVIL ENGINEERING.)

Albert Burnstine,	Percy Hunt Richardson,
Fred Calvin Davis,	Joseph Rusche, .
John Eugenius Hodge,	Edgar Ryan,
James Allen Lewis,	John Ward Shotwell, Jr.,
William Henry Pease,	Ernest Marshall Sprague,
Willard Pope,	Ebenezer Franklin Walbridge,
Henry Edward Whitaker.	

BACHELOR OF SCIENCE.

(IN GENERAL SCIENCE.)

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Solomon Eisenstædt,	Charles Orrin Townsend,
Charles Harrison Hatch,	Chester Wetmore,
William Alfred Hutzell,	Elmer Grant Willyoung.

BACHELOR OF PHILOSOPHY.

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David Kipling Cochrane,	Chester Harvey Rowell,
Rossetter Gleason Cole,	Francis Morton Sessions,
Louis Kossuth Comstock,	Henry Fish Shier,
Rachel Ella Dawson,	Edwin Elijah Washburn,
Walter Jones Hamilton,	Henry Kirk White.
Leverge Knapp,	

BACHELOR OF ARTS.

Mary Emma Ashley,	Charles Henry Cushing,
James Harvey Beazell,	Herbert Fletcher DeCou,
Frank Euclid Beeman (as of the	Ellsworth Thomas Derr,
class of 1887),	John Leander Duffy,
John Noble Blair,	Daniel Ephraim Ewald,
Edward Boyle,	Francis Chipman Ford,
Edgar Ewing Brandon,	Albert Eugene Gebhardt,
Gertrude Tamora Breed,	Caroline Louise Gelston,
Henry Herbert Brown,	Katy Helen Gower,
Joseph Beatty Burt,	William Amasa Grace,
Harvey Safford Bush,	Carrie Haigh,
Elizabeth Rebecca Clark,	Preston Manasseh Hickey,
Anson Bartie Curtis,	Hermann Charles William Hildner,

Alice Minerva Hosmer,	Paul Victor Perry,
Elmer Ellsworth Hubbard,	Frank George Plain,
Elsie Jones,	Erastus Francis Potter,
Franklin Harvey Kinney,	Flora Mabel Potter,
Emory Davis Kirby,	John Havard Powell,
Franklin Frees Lehman,	Harold Remington,
Armin Otto Leuschner,	Edwin Spencer Shaw,
Lucian Hezekiah Emmett Lowry,	Clyde Slone,
Robert Douglas MacLeod,	Honta Belle Smalley,
Martha Prentice Merwin,	Reuben Sherman Smith,
George Elmer Milliman,	Julia Ruth Tolman,
George Ralph Mitchell,	Bert John Vos,
Frank Irwin Muir,	George Joseph Waggoner,
Achsa S. Parker,	Laura E. Whitley,
Sterling Parks,	Bertha Hammond Wright.

MASTER OF PHILOSOPHY.

Henrietta Ash Bancroft, Ph. B.,	Gertrude Helen Mason, Ph. B.
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MASTER OF ARTS.

Fred Converse Clark, A. B.,	Susan Rachel Harrison, A. B.,
Carlos Bingham Cochran, A. B.,	Myra Elizabeth Pollard, A. B.,
Myron Oscar Graves, A. B.,	Fred Newton Scott, A. B.

DOCTOR OF PHILOSOPHY.

Ludovic Estes, A. M.,	Marie Emilie Holmes, A. M.,
Fred Manville Taylor, A. M.	

DOCTOR OF MEDICINE.

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Lida Powers Leasure,
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John Isaac Newcomb,
Zeovia Owen,
Francis Peele,
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Thomas Glashan Campbell,
Thomas Capek,
Fred Cavanagh,
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Elmer Elsworth Clark,
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Charles Brookman Cushman,
Peter John Danhof,
Clyde C. Dawson,
David Barnes Day,
David B. Decker,
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Marion DeVries,
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Michael Henry Hoey,
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William Harvey Turner,

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Meade Vestal,	Milton Millard Wildman,
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DOCTOR OF MEDICINE.

[HOMŒOPATHIC MEDICAL COLLEGE.]

George Dute Arndt,	John Hancock Lawrence,
William Frederick Brooks,	Sarah Idella Lee,
Mary Ann Cooke,	Hutoka Lucy Porter,
Edward Arthur Darby,	Eugene Woodman Ruggles,
Ella Kyes Dearborn,	Harriet Swathel Sanborn,
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Henry Martin Seybold,

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Lucius Chipman Smith,
Sherman M. Stauffer,
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Alfred Frederick Webster,
William Holt Woodburn,
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DOCTOR OF MEDICINE.

HENRY SEWALL,
Professor in the University of Michigan.

DOCTOR OF LAWS.

CLEVELAND ABBE,
Professor in United States Signal Service; meteorologist.

WILLIAM HAROLD PAYNE,
President of Peabody Normal College, and Chancellor of the University
of Nashville.

CATALOGUE
— OF —
FACULTIES AND STUDENTS
FOR THE YEAR 1888-89.

DEPARTMENT
— OF —
Literature, Science, and the Arts.

FACULTY.

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 *ELMER SANFORD, B. S.,
 JOSEPH H. DRAKE, A. B.,
 FRANK N. COLE, PH. D.,
 LEWIS A. RHODES, A. M.

* Died February 15, 1889.

STUDENTS.*

CANDIDATES FOR AN ADVANCED DEGREE, AND OTHER
RESIDENT GRADUATES.

NAME.		RESIDENCE.
Ephraim Douglass Adams, A. B.,	U. (5)	<i>Eldora, Ia.</i>
Ernest Alanson Balch, A. B., Kalamazoo College.	U. (4)	<i>Oshtemo.</i>
Henry Benner, B. S., West Chester State Normal School.	U. (2)	<i>Trumbauersville, Pa.</i>
John Edward Boyer, A. B., Whitman College.		<i>Walla Walla, W. T.</i>
Fred Converse Clark, A. M.,	U. (5)	<i>Ann Arbor.</i>
Wilbert Ferguson, A. B., Ohio Wesleyan University.	U. (1)	<i>Adrian.</i>
George Shepard French, B. S., Michigan Agricultural College.		<i>Lansing.</i>
Anson Elisha Hagle, B. S., Albion College.		<i>Albion.</i>
Elisha Monroe Hartman, B. L.,	U. (6)	<i>South Bend, Ind.</i>
Preston Manasseh Hickey, A. B.,	U. (1)	<i>Detroit.</i>
Frederick Charles Hicks, A. B.,	U. (5)	<i>Ann Arbor.</i>
Louis Clarence Hill, B. S. (C. E.),		<i>Detroit.</i>
Ruth Hoppin, A. M., Oberlin College.		<i>Moore Park.</i>
Mary Louise Jones, A. M., Michigan Female College.	U. (4)	<i>Lansing.</i>
Marietta Kies,	U. (6)	<i>Danielsonville, Conn.</i>
William Thaddeus Keating, A. B., St. Ignatius College.		<i>Elgin, Ill.</i>

* NOTE.—The following is the explanation of the letters and figures set against the students' names:

The letters in the column under the heading DEGREE show for what degree a student working on the credit system is a candidate; but when found opposite the name of a student pursuing the university system they indicate rather the direction in which such student is working than the degree which he may ultimately take. The figures under the heading COURSES show the number of Full Courses taken prior to the beginning of the current academic year 1888-9, and completed without conditions. By a Full Course is meant the equivalent of five exercises a week during a semester. The abbreviation U. means university system. See page 71. The figures from 1 to 10 in parenthesis indicate the group in which the chief studies of the person are found, as follows: (1) Ancient Languages and Literatures, (2) Mathematics, (3) Modern Languages and Literatures, (4) English Literature and Rhetoric, (5) History and Political Science, (6) Philosophy and the Fine Arts, (7) Physical Sciences, (8) Astronomy, (9) Geology, Zoology and Botany, (10) Engineering.

NAME.		RESIDENCE.
Llewellyn Cary Lawrence, A. B.,	U. (1)	<i>Ann Arbor.</i>
James Allen Lewis, B. S. (C. E.),		<i>Auburn, Kan.</i>
Nathan Edward Lewis, B. S., Kansas State Agricultural College.		<i>Manhattan, Kan.</i>
David Martin Lichty, B. S., West Chester State Normal School.	U. (7)	<i>Goodville, Pa.</i>
Helen Louisa Lovell, A. B.,	U. (1)	<i>Flint.</i>
Gertrude Helen Mason, Ph. M.,	U. (4)	<i>Ann Arbor.</i>
Robert Branson McCluer, A. B., Westminster College.		<i>O'Fallon, Mo.</i>
William Clarence McCollough, A. B., Butler University.	U. (1)	<i>LaFayette, Ind.</i>
Marion McDonald, A. B., Albion College.	U. (4)	<i>Shelbyville.</i>
Lucy Castiny McGee, B. S., Iowa Wesleyan University.		<i>Leadville, Col.</i>
Henry Close Montgomery, A. B., Hanover College.	U. (6)	<i>Seymour, Ind.</i>
Edward Joseph Murphy, A. B., St. Ignatius College.		<i>Chicago, Ill.</i>
Frederick George Novy, M. S.,	U. (7)	<i>Ann Arbor.</i>
Yeihiro Ono, Ph. B., Oberlin College.	U. (5)	<i>Yauagawa, Japan.*</i>
Henry Alvin Parker, Ph. B., Hillsdale College.		<i>Hillsdale.</i>
Levi Branson Reeder, B. S., Christian College.		<i>Centerville, Ore.</i>
Chester Harvey Rowell, Ph. B.,	U. (6)	<i>Bloomington, Ill.</i>
Fred Newton Scott, A. M.,	U. (4)	<i>Ann Arbor.</i>
Zillah Maria Sherman, A. B., Wells College.	U. (4)	<i>Ashtabula, O.</i>
Erwin F. Smith, B. S. (Bio.),	U. (9)	<i>Ann Arbor.</i>
James Hervey Smith, A. B., Oberlin College.	U. (7)	<i>Massillon, O.</i>
* Ida Maria Street, A. B., Vassar College.	U. (4)	<i>Omaha, Neb.</i>
Henry William Sutton, B. S., Lake Forest University.		<i>St. Anne, Ill.</i>
Henry Thurtell, B. S., Michigan Agricultural College.		<i>Agricultural College.</i>
William Michael Zumbro, A. B., Western College.	U. (5)	<i>Purdin, Mo.</i>

* Holder of Fellowship of the Western Association of Collegiate Alumnae.

GRADUATES STUDYING FOR MASTER'S DEGREE IN ABSENTIA.

NAME.		RESIDENCE.
Mary Elizabeth Allen, A. B.,	U. (1)	<i>Vermillion, Dak.</i>
Sarah Elizabeth Bangs, A. B.,	U. (5)	<i>Tallahassee, Fla.</i>
Arthur Lincoln Benedict, A. B.,	U. (9)	<i>Philadelphia, Pa.</i>
Elma Mary Blackman, B. L.,	U. (4)	<i>Schoolcraft.</i>
Antoinette Brown, B. L.,	U. (5)	<i>Chicago, Ill.</i>
Elizabeth Rebecca Clark, A. B.,	U. (4)	<i>Moorhead, Minn.</i>
Charles Horton Cooley, A. B.,	U. (5)	<i>Ann Arbor.</i>
John Hubert Greusel, B. L.,	U. (5)	<i>Detroit.</i>
William Henry Honey, A. B.,	U. (1)	<i>Monroe.</i>
Jeptha Elmer Lemon, A. B.,	U. (4)	<i>West Bay City.</i>
William Andrew McAndrew, A. B.,	U. (4)	<i>Hyde Park, Ill.</i>
Watson Birchard Millard, A. B.,	U. (5)	<i>St. Clair.</i>
Robert Webber Moore, Ph. B.,	U. (3)	<i>Georgetown, Ky.</i>
Frank Irwin Muir, A. B.,	U. (5)	<i>Battle Creek.</i>
Edwin Deppen Peifer, A. B.,	U. (5)	<i>Kansas City, Mo.</i>
John Oren Reed, Ph. B.,	U. (7)	<i>East Saginaw.</i>
James Lincoln Skinner, B. S.,	U. (5)	<i>Mt. Pleasant.</i>
Henry Silas Tibbits, A. B.,	U. (6)	<i>Racine, Wis.</i>
Charles Orrin Townsend, B. S.,	U. (9)	<i>Annapolis, Md.</i>
William Henry Walker, A. B.,	U. (6)	<i>Ann Arbor.</i>
James A. Wardlow, A. B.,	U. (6)	<i>Pierce City, Mo.</i>
Frank Enos Welch, A. B.,	U. (3)	<i>Bellerille, Ill.</i>
Allen Sisson Whitney, A. B.,	U. (5)	<i>Mt. Clemens.</i>
Fred Bishop Wixson, A. B.,	U. (4)	<i>Saginaw.</i>

CANDIDATES FOR A DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Fred Hull Abbott,	A. B.	18 3-5	<i>Hudson.</i>
Howard Townsend Abbott,	B. S.	11 2-5	<i>Minneapolis, Minn.</i>
Inez Louise Abbott,	Ph. B.		<i>Holt.</i>
Anna Howard Adams,	Ph. B.	12 4-5	<i>Ann Arbor.</i>
James Ware Adams,	B. L.	17	<i>Normal, Ill.</i>
Charles Edwin Albright,	B. L.	11 2-5	<i>Ann Arbor.</i>
Charles Towne Alexander,	B. L.	12 4-5	<i>Grosse Isle.</i>
Della Allen,	B. L.	12 1-5	<i>Ann Arbor.</i>
Hilah Lockwood Allen,	B. L.	6 1-5	<i>Portland.</i>
John Robins Allen,	B. S. (Mech. E.)		<i>Milwaukee, Wis.</i>
Elmer Louis Allor,	B. S. (C. E.)	4-5	<i>Mt. Clemens.</i>
Eugene Ernst Amory,	B. S. (Mech. E.)		<i>Chicago, Ill.</i>
Charles Samuel Amos,	Ph. B.		<i>Chicago, Ill.</i>
Frank Anderson,	B.S.(C.E.)	14	<i>Salt Lake City, Utah.</i>
Isabella Montgomery Andrews,	A. B. U. (1)		<i>Canandaigua, N. Y.</i>

170 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Frederick Robert Angell,	B. S.	1 1-5	<i>Oak Park, Ill.</i>
James Rowland Angell,	A. B.	13 1-5	<i>Ann Arbor.</i>
Daniel Read Anthony,	B. L.		<i>Leavenworth, Kan.</i>
Franc Arnold,	Ph. B.	12	<i>Allegan.</i>
Clifford Glasgow Arthur,	B. L.		<i>Decatur, Ill.</i>
Frank Riley Ashley,	B. S. (Chem.)	6 2-5	<i>Denver, Col.</i>
Edith Emma Atkins,	A. B.	11 4-5	<i>Ann Arbor.</i>
Helen Agnes Atkins,	Ph. B.	6 2-5	<i>Geneva, N. Y.</i>
Paul Frederick Bagley,	B. S.		<i>Detroit.</i>
Anna Bailey,	A. B.		<i>Battle Creek.</i>
Elizabeth Mary Bailey,	Ph. B.		<i>Ann Arbor.</i>
Frank Seymour Baillie,	B.S.(C.E.)	15 1-5	<i>Ann Arbor.</i>
John White Baker,	Ph. B.		<i>Cairo, Ill.</i>
Glen Edward Balch,	A. B.		<i>Kalamazoo.</i>
Walter John Baldwin,	B.S.(C.E.)	18	<i>Romansville, Pa.</i>
William Dearborn Ball,	B.S.(C.E.)	14 1-5	<i>Ann Arbor.</i>
Emma McAllen Ballentine,	A. B.	5 3-5	<i>Port Huron.</i>
Mary Clark Bancker,	Ph. B.	6 4-5	<i>Jackson.</i>
Arthur Hurd Bannon,	Ph. B.	13	<i>Portsmouth, O.</i>
Henry Towne Bannon,	B. L.	18 2-5	<i>Portsmouth, O.</i>
Grant S. Barber,	B. S.	13 1-5	<i>Midland.</i>
Fannie Barker,	Ph. B.	18 4-5	<i>Davenport, Ia.</i>
Blanche Kingsbury Barney,	B. L.	20 3-5	<i>Ann Arbor.</i>
Thomas Edson Barnum,	B. S.(C.E.)		<i>Port Huron.</i>
Charles James Barr,	Ph. B.		<i>Aurora, Ill.</i>
William Bassett,	B. S.(Mech.E.)		<i>Ann Arbor.</i>
Harry Moore Bates,	Ph. B.	U. (5)	<i>Chicago, Ill.</i>
Virginia Beauchamp,	A. B.	17 4-5	<i>Baldwinsville, N. Y.</i>
Willis John Beckley,	Ph. B.	20 4-5	<i>Ravenna, O.</i>
Louis Begemann,	B. S.	17 3-5	<i>Evansville, Ind.</i>
Elbert King Benedict,	Ph. B.		<i>Manistee.</i>
Dora Bennett,	Ph. B.	15 4-5	<i>Carlisle, O.</i>
Flora Bennett,	Ph. B.	14 1-5	<i>Carlisle, O.</i>
Andrew Rennick Benson,	B.S.(C.E.)	12	<i>Ann Arbor.</i>
Edmund Berrigan,	A. B.	2-5	<i>Rockford.</i>
Eugene Nimmons Best,	A. B.	16 3-5	<i>Ann Arbor.</i>
Allan B. Bevans,	B. L.		<i>Decatur, Ill.</i>
James L. Bevans,	B. L.		<i>Decatur, Ill.</i>
Clarissa Sophia Bigelow,	Ph. B.	20 4-5	<i>Galva, Ill.</i>
Mortimer Osborne Bigelow,	Ph. B.		<i>Birmingham.</i>
William Gray Billings,	B. L.		<i>Davidson Station.</i>
Horace Van Birdsell,	B. L.	19	<i>South Bend, Ind.</i>
Henry Gaston Bissell,	A. B.	8 3-5	<i>Armada.</i>
James Blair, Jr.,	Ph. B.	6 1-5	<i>Grand Rapids.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
William Blair,	B. S. (Mech. E.)		<i>Chambersburg, Pa.</i>
Thaddeus Lincoln Bolton,	A. B.	16 2-5	<i>Ann Arbor.</i>
Willis Elmer Bond,	A. B.	15 4-5	<i>Ann Arbor.</i>
Mamah Boaton Borthwick,	A. B.		<i>Oak Park, Ill.</i>
Benjamin Parsons Bourland,	A. B.	18	<i>Peoria, Ill.</i>
Frank Swift Bourns,	B. S.	8 3-5	<i>Ann Arbor.</i>
Hollie Broughton Bracewell,	Ph. B.	20	<i>Corydon, Ia.</i>
Ralph Robinson Bradley,	B. L.		<i>Hinsdale, Ill.</i>
Samuel Stewart Bradley,	B.S.(C.E.)	4 3-5	<i>Ann Arbor.</i>
George Russel Brandon,	B.S.(Mech.E.)	12 1-5	<i>Detroit.</i>
James Fleming Breakey,	B. S.		<i>Ann Arbor.</i>
Mary Blanche Briggs,	B. L.	14 3-5	<i>Battle Creek.</i>
Myrn Brockett,	B. L.		<i>Charlotte.</i>
Albert Sidney Brown,	A. B.		<i>Chicago, Ill.</i>
Andrew McCormack Brown,	B. S.	18 3-5	<i>Jamestown, O.</i>
Elmer Ellsworth Brown,	A. B.	17 3-5	<i>Normal, Ill.</i>
William Simon Brown,	B. S.	5 1-5	<i>Elgin, Ill.</i>
Ella Mina Brush,	B. S.		<i>Ann Arbor.</i>
William Henry Buddenbaum, A.B.,	A. B.	20	<i>Berea, O.</i>
Baldwin University.			
Minnie Thornton Buick,	B. L.	5 3-5	<i>Detroit.</i>
Harry Conant Bulkley,	A. B.		<i>Monroe.</i>
Follett Wilkinson Bull,	Ph. B.	5 3-5	<i>Ottawa, Ill.</i>
Justin Briggs Bullis,	B.S.(C.E.)	13	<i>Ann Arbor.</i>
Phebe Josepha Bullock,	A. B.	7	<i>East Saginaw.</i>
Gertrude Mary Bundy,	A. B.		<i>Chicago, Ill.</i>
Fitzhugh Burns,	A. B.		<i>Kalamazoo.</i>
Augustus Seymour Butler,	B. S.(C.E.)	5 3-5	<i>Allegan.</i>
Ok Button,	B. S.(Chem.)	12	<i>Ann Arbor.</i>
Henry Magnus Butzel,	Ph. B.	5	<i>Detroit.</i>
Fred George Cadwell,	A. B.		<i>Adrian.</i>
Mary Victoria Cady,	A. B.	11 4-5	<i>Ypsilanti.</i>
Alfred Stone Calkins,	B.S.(C.E.)	5 2-5	<i>Allegan.</i>
Elizabeth Alma Campbell,	Ph. B.	4 3-5	<i>Ann Arbor.</i>
Katherine Campbell,	A. B.	9 1-5	<i>Ypsilanti.</i>
Henry Ernest Candler,	B. S.		<i>Detroit.</i>
Irving Dallas Carpenter,	B. S.(C.E.)	2 1-5	<i>Battle Creek.</i>
Lewis Clinton Carson,	A. B.		<i>Detroit.</i>
Mattie Anna Catton,	Ph. B.	11 2-5	<i>Perry, N. Y.</i>
Theodore Lincoln Chadbourne,	B. S.	6 1-5	<i>Vinton, Ia.</i>
William Stewart Chandler,	Ph. B.		<i>Coldwater.</i>
Glenn Leveryn Chapman,	B. L.		<i>Lansing.</i>
Dwight Bissell Cheever,	B. S.	7 4-5	<i>Ann Arbor.</i>
George Parkhurst Cheney,	B. L.		<i>Aurora, Ill.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Gaylord Hammond Chilcote,	B. L.		<i>Rensselaer, Ind.</i>
James Edward Church, Jr.,	B. S.		<i>Holly.</i>
Albert Loring Clark,	B. S.(Mech.E.)		<i>Ann Arbor.</i>
Lucy Durfee Clark,	A. B.		<i>Lakerille, N. Y.</i>
Frederick Marshall Clarke,	B.S.(Mech.E.)	11	<i>Dubuque, Ia.</i>
Stanton Walter Clarke,	B. L.	12 4-5	<i>May.</i>
Frank Warfield Clay,	B. S.(C.E.)		<i>Ann Arbor.</i>
Fred Bagley Close,	B.S.(M.E.)	7 3-5	<i>Hancock.</i>
Warren John Clough,	A. B.	8 2-5	<i>Kalamazoo.</i>
William Gibson Cockburn,	A. B.	11 4-5	<i>Oshtemo.</i>
George Pierre Codd,	A. B.	6 3-5	<i>Detroit.</i>
Edwin Raymond Cole,	B. L.		<i>Vassar.</i>
Emma Sylvia Cole,	B. S.		<i>Chicago, Ill.</i>
William Henry Cole,	B. S. (Mech. E.)		<i>Hinsdale, Ill.</i>
Allen Lysander Colton,	Ph. B.	18 1-5	<i>Ann Arbor.</i>
Ernest Ben Conrad,	B.S.(Mech.E.)	13-1-5	<i>Ann Arbor.</i>
Willis Gurdon Cook,	B. S.	6 2-5	<i>Grand Blanc.</i>
Thomas Benton Cooley,	A. B.	6 3-5	<i>Ann Arbor.</i>
Edwin Marion Coolidge,	B.S.(Mech.E.)	13 4-5	<i>Winnebago, Ill.</i>
Lucy Coolidge,	Ph. B.	6 2-5	<i>Bloomington, Ill.</i>
Leon Huxley Cooper,	B.S.(Mech.E.)		<i>Louisville, Ky.</i>
Katherine Cramer,	Ph. B.		<i>Ann Arbor.</i>
Frederic Walter Crane,	B.S.(Mech.E.)	12	<i>Ann Arbor.</i>
Loretta Crissman,	Ph. B.	13 4-5	<i>Washington.</i>
Flavius Morse Crocker,	B.S.(C.E.)	21 4-5	<i>Ann Arbor.</i>
Herbert Samuel Crocker,	B.S.(C.E.)	21 4-5	<i>Ann Arbor.</i>
Frank Noble Crosby,	A. B.		<i>Hastings, Minn.</i>
James Moseley Crosby,	B.S.(Mech.E.)	6 3-5	<i>Grand Rapids.</i>
Joseph Sherman Crowther,	B.S.(C.E.)		<i>Battle Creek.</i>
George Sears Curtiss,	A. B.	7 3-5	<i>Geneseo, N. Y.</i>
Sylvanus Wright Curtiss, Jr.,	Ph. B.		<i>Monroe.</i>
Carrie Elizabeth Cutler,	A. B.		<i>Ionia.</i>
Alice Harper Damon,	A. B.	15	<i>Concord, Mass.</i>
Eleazer Darrow,	B. S.	1 3-5	<i>Cincinnati, O.</i>
Cora Armenia Deake,	A. B.	13 4-5	<i>South Lyon.</i>
Lizzie Whetten Dean,	B. S.	5 3-5	<i>Ann Arbor.</i>
Louis Vincent De Foe,	B. L.	6 1-5	<i>Adrian.</i>
George Winthrop De Haven, Jr.,	B.S.(C.E.)	7 2-5	<i>Chicago, Ill.</i>
William Henry Dellenback,	Ph. B.	2 3-5	<i>Hinckley, Ill.</i>
Lottie De Mott,	B. L.	6 1-5	<i>Niles.</i>
Charles Arza Denison,	B. L.		<i>Decatur, Ill.</i>
Walter Dennison,	A. B.	6	<i>Ypsilanti.</i>
William Herman Detwyler,	Ph. B.	21 1-5	<i>Jackson.</i>
Henry Bingham Dewey,	A. B.	12 4-5	<i>Owosso.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Frank Haigh Dixon,	Ph. B.	10 1-5	Winona, Minn.
John Dolese, Jr.,	B. S.		Brighton Park, Ill.
Rose Dolese,	B. L.		Brighton Park, Ill.
John Thomas Donoghue,	B. L.	9	La Salle, Ill.
William Henry Dorrance,	B.S.(Mech.E.)		Ann Arbor.
Louis Roscoe Doud,	B. S.	18	Winona, Minn.
Edgar Millard Doughty,	A. B.	6	Matteawan, N. Y.
Robert Woodin Doughty,	A. B.		Matteawan, N. Y.
Henry Woolsey Douglas,	B.S.(Mech.E.)	18	Ann Arbor.
Earle Wilbur Dow,	A. B.	6 2-5	Bellefontaine, O.
James Shelby Downard,	B. L.		Wapakoneta, O.
Walter Schuyler Drew,	B. L.	5 3-5	Hammondsport, N. Y.
Robin Ernest Dunbar,	A. B.	13 3-5	South Bend, Ind.
Guy Dale Duncan,	Ph. B.	14 4-5	Longmont, Col.
Irving William Durfee,	Ph. B.		Plymouth.
Ruth Bertha Durham,	B. S.		Ann Arbor.
James Edward Eagan,	B. L.	4 2-5	Ann Arbor.
William Worth Eagan,	B. S.	20 2-5	Ann Arbor.
John Kirkpatrick Earp,	A. B.		Ann Arbor.
Charles Kirke Eddy,	Ph. B.	20 3-5	East Saginaw.
Martha Florence Eddy,	Ph. B.		Kewanee, Ill.
Edwin Hugh Edwards,	B. S.		Winnebago, Ill.
John Robert Effinger, Jr.,	Ph. B.	5 2-5	Chicago, Ill.
Charles Edward Everett,	B. L.	20 1-5	Lansing.
Albert Chauncey Eycleshymer,	B.S.(Bio.)	16 2-5	Hastings.
Harold Wellman Fairbanks,	B. S. U.	(9)	San Diego, Cal.
Royal Twombly Farrand,	Ph. B.	10	Detroit.
Lena Elizabeth Faulds,	A. B.	6 2-5	East Saginaw.
James Edward Ferris,	Ph. B.	1	Toledo, O.
Pierre Peyre Ferry,	B. L.		Seattle, W. T.
Henry George Field,	B. S.		Detroit.
Charles Adam Fisher,	B.S.(C.E.)	6	Pontiac.
Fred Charles Fisher,	B.S.(C.E.)		Lake Linden.
Marie Fleming,	A. B.	3 1-5	Port Huron.
Emerson Armer Fletcher,	B.S.(C.E.)	5	Lake Linden.
Grant Martin Ford,	A. B.	13 2-5	Chicago, Ill.
Maude Forhan,	B. L.	1 4-5	East Saginaw.
Abram Lynn Free,	B. L.	3	Paw Paw.
Joseph Kendall Freitag,	B.S.(C.E.)	10 4-5	New York, N. Y.
Carl Kimball Friedman,	B.S.(C.E.)	5 3-5	Detroit.
Herbert Martin Frost,	A. B.	13 4-5	Ann Arbor.
Ellen Elizabeth Garrigues,	A. B.	16	Ann Arbor.
Charles Byron Garrison,	A. B.	12 4-5	Vernon.
Ralph Stillman Garwood,	A. B.		Ann Arbor.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Winthrop Enoch Gastman,	B.S.(Mech.E.)	12	<i>Decatur, Ill.</i>
Edwin Francis Gay,	A. B.	14 4-5	<i>Ann Arbor.</i>
Effie Matilda Gaylord,	Ph. B.	19 3-5	<i>Ludington.</i>
John Evans Gernand,	B. L.	13 4-5	<i>Rossville, Ill.</i>
John Clayton Gifford,	B.S.(Bio.)	12 2-5	<i>May's Landing, N. J.</i>
Hiram North Ernest Gleason,	B.S.(C.E.)	4 3-5	<i>Sherman, N. Y.</i>
James Waterman Glover,	B. L.		<i>East Saginaw.</i>
Jennie Grace Gobbe,	B. S.		<i>Ann Arbor.</i>
Charles Edwin Goddard,	B. S.	20 3-5	<i>Winnebago, Ill.</i>
William Ellis Goddard,	Ph. B.	13 3-5	<i>Lena, Ill.</i>
Moses Gomberg,	B. S.	13 3-5	<i>Elisabethgrad, Russia</i>
Mertie Leora Goodell,	Ph. B.	5 4-5	<i>Ann Arbor.</i>
Austin Carlos Gormley,	Ph. B.		<i>Ann Arbor.</i>
Louis Edward Gossman, LL. B.,	B. L.	10 1-5	<i>Canton, Minn.</i>
Frances Katherine Gould,	B. L.		<i>Chesaning.</i>
Jennie Mary Grace,	B. L.	4-5	<i>Ann Arbor.</i>
Frank Burton Graves,	B.S.(C.E.)		<i>Brighton, N. Y.</i>
Paul Robert Gray,	A. B.	12 4-5	<i>Detroit.</i>
Bernard Lincoln Green,	B.S.(C.E.)	15 2-5	<i>Washington, D. C.</i>
Charles Alexander Green,	Ph. B.	16 1-5	<i>Saginaw.</i>
Frederick Dexter Green,	A. B.		<i>Berlin Falls, N. H.</i>
John Greenshields,	A. B.	16	<i>Romeo.</i>
Charles Jason Greenstreet,	B.S.(Chem.)	11 4-5	<i>Indianapolis, Ind.</i>
Lizzie Caroline Griffin,	B. L.	5 4-5	<i>Bellefontaine, O.</i>
William Edgar Griffin,	Ph. B.	6	<i>Wenona, Ill.</i>
Roger Wisner Griswold,	Ph. B.	5 4-5	<i>Grand Rapids.</i>
Edwin William Groves,	B.S.(C.E.)	17 2-5	<i>Ann Arbor.</i>
Fannie May Groves,	B. S.	5 3-5	<i>Ann Arbor.</i>
Sam Bates Grubbs,	A. B.		<i>Harrodsburg, Ky.</i>
Myrtle Hale,	Ph. B.	1 4-5	<i>Kansas City, Mo.</i>
Matthew Brown Hammond,	Ph. B.	4	<i>South Bend, Ind.</i>
Asa Herbert Hankerson,	B. L.		<i>Caro.</i>
Hutchins Hapgood,	Ph. B.	7 3-5	<i>Alton, Ill.</i>
Alexander Brownell Hardy,	A. B.		<i>Ypsilanti.</i>
Orville Richard Hardy,	B. L.	6	<i>Montague.</i>
Enoch Horton Harriman,	B. L.		<i>Greenville.</i>
Julian Dana Harmon,	A. B.	19 1-5	<i>Warren, O.</i>
Grace Ella Harrah,	B. L.	12 4-5	<i>Detroit.</i>
James Hugh Harris,	A. B.	6 2-5	<i>Lake Linden.</i>
William Pickett Harris,	B.S.(C.E.)	8 4-5	<i>Detroit.</i>
William Welton Harris,	Ph. B.	18 3-5	<i>Jackson.</i>
Grace Hastings,	B. S.	6	<i>Sandusky, O.</i>
Alice Emma Hatch,	B. L.	1 3-5	<i>Bay City.</i>
Helen Louise Hatch,	B. L.	7	<i>Bay City.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Henry James Hatch,	B.S.(C.E.)	6	<i>Jackson.</i>
James Noble Hatch,	B.S.(C.E.)		<i>Vacaville, Cal.</i>
Frank Winchester Hawks,	Ph. B.	22 2-5	<i>Goshen, Ind.</i>
Horace Walter Hawkins,	B. S.		<i>Elgin, Ill.</i>
Willis Boyd Hayes,	B.S.(C.E.)	12 2-5	<i>Detroit.</i>
William Carey Hebard,	A. B.	12	<i>Pequaming.</i>
Frank Clarence Hecker,	B.S.(Mech.E.)		<i>Detroit.</i>
Julius Hegeler,	B.S.(C.E.)	20 2-5	<i>La Salle, Ill.</i>
Frank Oscar Hellier,	B. L.	6	<i>Grass Lake.</i>
Faith Helmer,	Ph. B.	12 1-5	<i>Ann Arbor.</i>
Russell Herley Hemley,	B. L.		<i>Trenton, Mo.</i>
David Bill Hempstead,	A. B.	12 4-5	<i>Salt Lake City, Utah.</i>
Percy Benjamin Herr,	Ph. B.	12 3-5	<i>Chicago, Ill.</i>
Belva Mary Herron,	B. L.	20 3-5	<i>Mexico, Mo.</i>
Carl William Hertel,	B.S.(Mech.E.)	1 3-5	<i>Ann Arbor.</i>
Charles Wardell Heywood,	A. B.		<i>Irving Park, Ill.</i>
Ida Z. Hibbard,	B. L.	7 1-5	<i>Detroit.</i>
George Oswin Higley,	B.S.(Chem.)	44-5	<i>Gibbon, Neb.</i>
Jonathan August Chas. Hildner,	A. B.	13 1-5	<i>Detroit.</i>
Charles Hill,	B. S.	7	<i>Creston, Ill.</i>
John Lewis Hill,	B.S.(C.E.)		<i>Ottawa, Ill.</i>
Theodore Henry Hinchman, Jr.,	A. B.	6 2-5	<i>Detroit.</i>
Frances Hinkley,	B. S.	11 2-5	<i>Benton Harbor.</i>
Rufus Wilbur Hitchcock,	B. L.		<i>Ann Arbor.</i>
Fred Hoffman,	B. L.	2	<i>Port Huron.</i>
Walter Simpson Holden,	A. B.	21 1-5	<i>Chicago, Ill.</i>
Ernest Oscar Holland,	B. L.	1 3-5	<i>Winona, Minn.</i>
Robert Turner Holland,	Ph. B.	5 3-5	<i>East Saginaw.</i>
Glenn Woolsey Holmes,	A. B.		<i>Grand Rapids.</i>
Anderson Hoyt Hopkins,	B. L.	16	<i>Ockley, Ind.</i>
Rosella Horton,	Ph. B.		<i>Pontiac.</i>
Phebe Anne Isadore Howell,	A. B.	17 2-5	<i>Ionia.</i>
John T. Noye Hoyt,	A. B.	9 4-5	<i>Grand Rapids.</i>
Charles Frederick Hubbard,	B. L.		<i>Decatur, Ill.</i>
William Frank Hubbard,	A. B.	8 4-5	<i>Monroe.</i>
Melburn Walter Hull,	B. S.		<i>Saline.</i>
Margaret Millicent Hunt,	Ph. B.	11 4-5	<i>Alpena.</i>
Arthur Mekeel Hussey,	A. B.	15 2-5	<i>North Berwick, Me.</i>
William J. Hussey,	B.S.(C.E.)	19 3-5	<i>Mendon, O.</i>
Frank Simpson Hutchinson,	B.S.(M.E.)	3 4-5	<i>Rochester, N. Y.</i>
Charles Sumner Hyde,	A. B.	16	<i>Grayling.</i>
George Preston Hyde,	Ph. B.	19	<i>Joliet, Ill.</i>
Kate Viola Ilgenfritz,	Ph. B.		<i>Monroe.</i>
John Alexander Jameson, Jr.,	A. B.	7 1-5	<i>Hyde Park, Ill.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Mary Adelaide Jay,	A. B.		<i>Richmond, Ind.</i>
Alfred Eugene Jennings,	A. B.	18	<i>Ann Arbor.</i>
Hattie Crosby Jennings,	A. B.	18 2-5	<i>Ann Arbor.</i>
Fred Hyde Jerome,	B. L.		<i>Saginaw.</i>
Kate Lincoln Johnson,	B. L.	20 2-5	<i>Ann Arbor.</i>
Lee Doan Johnson,	B.S.(Mech.E.)		<i>Cleveland, O.</i>
Nellie Minerva Johnson,	B. L.	19 3-5	<i>Vassar.</i>
William Minto Johnstone,	B.S.(C.E.)		<i>Hyde Park, Ill.</i>
Anna Susan Jones,	A. B.	18	<i>Grand Rapids.</i>
Lewis Ralph Jones,	Ph. B.	23 1-5	<i>Mt. Morris, Ill.</i>
Bertha Joslyn,	B. L.	19 4-5	<i>Port Huron.</i>
Otis Wilbra Joslyn,	B.S.(Mech.E.)	5 2-5	<i>Port Huron.</i>
William Byron Kelly,	B. L.	3 1-5	<i>Xenia, O.</i>
Philo Kemery,	B. L.	5 2-5	<i>Flint.</i>
John Reuben Kempf,	B. S.(Mech. E.)	14 1-5	<i>Ann Arbor.</i>
Arthur Jay Kendall,	B. S.	6 2-5	<i>Ann Arbor.</i>
Harry James Kennedy,	A. B.	13 1-5	<i>Ionia.</i>
Thomas Kerl,	A. B.	6	<i>Oakland, Neb.</i>
John Pease Keyes,	Ph. B.	7 4-5	<i>Winona, Minn.</i>
Richard Khuen, Jr.,	B.S.(C.E.)	20 2-5	<i>Saginaw.</i>
William Alfred Kickland,	B. S.		<i>Crystal.</i>
Fred Edward King,	B.S.(C.E.)	5 3-5	<i>Adrian.</i>
Mary Paddock King,	Ph. B.	10 2-5	<i>Pontiac.</i>
Mary May Kirtland,	B. L.		<i>Rochester, Ind.</i>
Gustav Kleene,	A. B.	6 2-5	<i>Peoria, Ill.</i>
Abraham Lincoln Knisely,	B. L.	7 4-5	<i>Benton Harbor.</i>
Lydia Eleanor Kniss,	B. L.	15 2-5	<i>Schoolcraft.</i>
Day Krolik,	Ph. B.	3 3-5	<i>Detroit.</i>
Mary Ernestine Krolik,	Ph. B.		<i>Detroit.</i>
Pomeroy Ladue,	B. S.(Mech.E.)	13 2-5	<i>Detroit.</i>
Chauncey Robert Lamb,	B. S.	4 3-5	<i>Clinton, Ia.</i>
Garrett Eugene Lamb,	B. S.		<i>Clinton, Ia.</i>
John Donald Lamont,	B.S.(C.E.)		<i>Lake Linden.</i>
Robert Patterson Lamont,	B.S.(C.E.)	7 3-5	<i>Detroit.</i>
William Beekman Larrabee,	Ph. B.		<i>Detroit.</i>
Virginia Law,	B. S.		<i>Monterey, Mexico.</i>
Agnes May Leas,	B. L.		<i>Ann Arbor.</i>
Nannie Fay Leas,	Ph. B.	3 3-5	<i>Ann Arbor.</i>
Robert Blum Lederle,	B. S.		<i>Detroit.</i>
Coral Evalena Leigh,	B. L.		<i>Ionia.</i>
Frances Charlotte Lennox,	Ph. B.	19 2-5	<i>East Saginaw.</i>
Frank Alexander Leslie,	B. L.	13 3-5	<i>Ockley, Ind.</i>
Alfred Courtney Lewerenz,	A. B.	2 1-5	<i>Detroit.</i>
Edward Robert Lewis,	B. L.	7 1-5	<i>Jackson.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Thomas David Lewis,	Ph. B.	13 2-5	<i>Salt Lake City, Utah.</i>
Frank Waterman Lightner,	Ph. B.	2-5	<i>Detroit.</i>
William Allan Livingstone,	B. S.(Mech.E.)	18 2-5	<i>Detroit.</i>
Fred Sibley Loomis,	A. B.	18 1-5	<i>Chicago, Ill.</i>
Harriet Anges Lovell,	A. B.	5 4-5	<i>Flint.</i>
Frederick Homan Loveridge,	B. S.(Mech.E.)	20 1-5	<i>Coldwater.</i>
William Watson Lovett,	B. L.	6	<i>Detroit.</i>
Jacob Lowenhaupt,	B. L.	7 1-5	<i>Mt. Vernon, Ind.</i>
William John Le Hunte Lyster,	Ph. B.		<i>Detroit.</i>
Edgar Withrow MacPherran,	A. B.	10 2-5	<i>Sterling, Ill.</i>
Elmer Elsworth Mains,	B.S.(M.E.)	6 1-5	<i>Ann Arbor.</i>
Walter Leeman Mann,	Ph. B.	13	<i>Ann Arbor.</i>
Rollo Glenroy Manning,	B. S.(C.E.)	14 1-5	<i>Elkhart, Ind.</i>
Edward Marsh,	B. L.	12	<i>Bloomington, Ill.</i>
Ernest Marshall,	B. S.	6 1-5	<i>Aurelius.</i>
Philip Larmon Marshall,	B.S.(Mech.E.)		<i>Chicago, Ill.</i>
Edward Gottlieb Maul,	B. S.		<i>Kewanee, Ill.</i>
William Kilpatrick Maxwell,	A. B.	13 1-5	<i>Cincinnati, O.</i>
Edmund Schuyler Colfax May,	B.S.(C.E.)	13 1-5	<i>Newark, N. J.</i>
Clinton Perham McAllaster,	B.S.(C.E.)		<i>Ann Arbor.</i>
Eugene Loring McAllaster,	B.S.(Mech.E.)	22	<i>Ann Arbor.</i>
Joseph Lynn McAllister,	B.S.(C.E.)	11 4-5	<i>Sinclairville, N. Y.</i>
Irving George McColl,	B. L.	12 4-5	<i>Delhi Mills.</i>
Robert Harry McCrea,	Ph. B.		<i>Wabash, Ind.</i>
Fred James McElwee,	Ph. B.		<i>Big Rapids.</i>
George Thomas McGee,	B.S.(C.E.)	2 1-5	<i>Jackson.</i>
Harrison Beecher McGraw,	A. B.	6 2-5	<i>Cleveland, O.</i>
Stanley Dickinson McGraw,	B. L.		<i>Detroit.</i>
Maude McGregor,	A. B.		<i>Ann Arbor.</i>
George Edward McIlwain,	A. B.	12 4-5	<i>Wayne.</i>
John Aloysius McLaughlin,	B. L.	4 1-5	<i>Muskegon.</i>
David Williams McMorran,	B. S.		<i>Port Huron.</i>
Arthur McNeal,	A. B.	13 3-5	<i>Olympia, W. T.</i>
Martin McVoy, Jr.,	B. S.	6	<i>Bay City.</i>
Clarence Linton Meader,	A. B.	3 4-5	<i>Battle Creek.</i>
Clara Marie Meiser,	Ph. B.	5 2-5	<i>Detroit.</i>
George Duncan Mena,	B. L.		<i>Hesperia.</i>
Richard Dwight Merrill,	B. L.		<i>Saginaw.</i>
Frank Thomson Merry,	B. L.	14 2-5	<i>Ann Arbor.</i>
Ida Mighell,	B. L.	7 2-5	<i>Aurora, Ill.</i>
Lee Ezekiel Mighell,	B. L.		<i>Aurora, Ill.</i>
Edwin Lillie Miller,	A. B.	14 3-5	<i>Detroit.</i>
Jennie Maud Miller,	Ph. B.	7	<i>Kalamazoo.</i>
John Barnes Miller,	A. B.		<i>Port Huron.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Owen Lambe Miller,	A. B.	8 3-5	<i>Plymouth.</i>
Wilhelm Miller,	A. B.		<i>Detroit.</i>
Loren Douglas Milliman,	A. B.	9 1-5	<i>Lakeville, N. Y.</i>
Warren French Mills, LL. B.,	B. L.	15 2-5	<i>San Francisco, Cal.</i>
John Rice Miner,	B.S. (C.E.)	103-5	<i>Ann Arbor.</i>
John Edwin Moore,	B.S. (Chem.)	7 2-5	<i>Ann Arbor.</i>
Reuben Rice Moore,	A. B.	6 1-5	<i>St. Clair.</i>
Frank Marion Morrison,	A. B.		<i>Castine, O.</i>
Jacob Worley Morrison,	A. B.		<i>Castine, O.</i>
Edith Irene Moser,	B. L.		<i>Charlotte.</i>
William Vaughan Moses,	B.S. (C.E.)	22 1-5	<i>Urbana, O.</i>
Bertrand Paul Mossman,	Ph. B.	6 2-5	<i>Fort Wayne, Ind.</i>
Arthur Douglass Mott,	B. S. (C. E.)	15	<i>Battle Creek.</i>
Oscar Wood Moyle, B. S., University of Deseret.	Ph. B.	14 2-5	<i>Salt Lake City, Utah.</i>
George Fred Mulliken,	A. B.		<i>Detroit.</i>
Albert Charles Muma,	B. S.		<i>Flint.</i>
Loyal Levi Munn, Jr.,	A. B.	5 3-5	<i>Freeport, Ill.</i>
Lewis Murbach,	Ph. B.	18 3-5	<i>Riga.</i>
William Robbins Murray,	Ph. B.		<i>Marquette.</i>
Clyde Vallandigham Nafe,	A. B.	15 1-5	<i>Rochester, Ind.</i>
Frank Wesley Nagler,	B. L.	5 2-5	<i>Hastings.</i>
Elmer Hartson Neff,	B.S. (Mech. E.)	17 2-5	<i>Flint.</i>
Minnie Howe Newby,	Ph. B.	23	<i>Chicago, Ill.</i>
Frederick Charles Newcombe,	B. S.	12	<i>Flint.</i>
Adnah Clifton Newell,	B.S. (Mech. E.)		<i>Grand Rapids.</i>
David Homer Newton,	B. L.		<i>Pontiac.</i>
Edward Crampton Nichols,	B. L.	2-5	<i>Maywood, Ill.</i>
Vernon Elmer Nichols,	B. L.		<i>Greenville.</i>
Walter Hammond Nichols,	B.S. (Chem.)	4 2-5	<i>Salt Lake City, Utah.</i>
Willard Davalson Norton,	B. L.		<i>La Porte, Ind.</i>
Jesse Francis Orton,	A. B.		<i>Coldwater.</i>
Benjamin Eldridge Page,	A. B.	6 2-5	<i>Ann Arbor.</i>
William Loyd Page,	A. B.	6 1-5	<i>Ann Arbor.</i>
Nathan Charles Paine,	B. S. (C. E.)		<i>Oshkosh, Wis.</i>
Sadie Adelaide Paine,	A. B.		<i>Ann Arbor.</i>
Charles Henry Palmatier,	B. L.		<i>Hastings.</i>
Carrie Marion Palmer,	B. L.	18 2-5	<i>Ann Arbor.</i>
Samuel Culver Park,	A. B.	1 4-5	<i>Salt Lake City, Utah.</i>
Lewis Wallace Parker,	B. L.	22 1-5	<i>Dubuque, Ia.</i>
Richard Sumner Parmly,	A. B.		<i>Chicago, Ill.</i>
Henry Milton Patten,	Ph. B.		<i>Muscatine, Ia.</i>
Marion George Paul,	Ph. B.		<i>Ann Arbor.</i>
Caroline Crosby Penny,	A. B.	14 1-5	<i>Ann Arbor.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Carl Dio Perry,	A. B.		<i>Elk Creek, N. Y.</i>
Ernest Blackman Perry,	B.S.(Mech.E.)	20 1-5	<i>Ann Arbor.</i>
Nellie Genevieve Phillips,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Frederick Sherman Porter,	A. B.		<i>Cleveland, O.</i>
Dwight Alfred Pray,	B. L.	3 1-5	<i>Whitmore Lake.</i>
Eber C. Preble,	B.S.(Mech.E.)		<i>Chicago, Ill.</i>
Robert Bruce Preble,	A. B.	19 2-5	<i>Chicago, Ill.</i>
George Griffin Prentis,	B. L.		<i>Detroit.</i>
Fred Leroy Prentiss,	A. B.	16 3-5	<i>Monroeville, O.</i>
Bertha Edna Pritchard,	Ph. B.	6 1-5	<i>Allegan.</i>
William Charles Quarles,	Ph. B.		<i>Racine, Wis.</i>
Harry Nelson Quigley,	A. B.	15 1-5	<i>Richwood, O.</i>
Agnes Clarissa Ralph,	B. L.		<i>Sycamore, Ill.</i>
William Butterfield Ramsay,	A. B.	13 1-5	<i>Detroit.</i>
Arthur Theodore Randall,	A. B.		<i>Chicago, Ill.</i>
Louise Fitz Randolph,	Ph. B.	9	<i>Toledo, O.</i>
Alfred Day Rathbone,	A. B.		<i>Grand Rapids.</i>
George Robert Ray, Jr.,	Ph. B.		<i>Manistee.</i>
Fanny K. Read,	B. L.	13 2-5	<i>Richland.</i>
George Rebec,	Ph. B.	6 1-5	<i>East Saginaw.</i>
Robert Minard Reid,	A. B.	8	<i>Salem, Ind.</i>
Robert Kennicott Reilly,	Ph. B.	13 2-5	<i>Chicago, Ill.</i>
Helen Annetta Rice,	B. L.		<i>Englewood, Ill.</i>
Herbert Louis Rice,	B. L.		<i>Englewood, Ill.</i>
Albert Dykeman Rich,	B. L.	3 2-5	<i>Chicago, Ill.</i>
Leon Josiah Richardson,	Ph. B.	10 1-5	<i>Jackson.</i>
Frederic Stephen Richmond,	B.S.(Mech.E.)	7 4-5	<i>Ann Arbor.</i>
Abram Linderman Riker,	B. L.	6 4-5	<i>Pontiac.</i>
Charlotte Jeannette Roberts,	Ph. B.		<i>South Bend, Ind.</i>
Oscar Roberts,	B. S. (C. E.)		<i>Westfield, Ind.</i>
Roscoe Linscott Roberts,	B. L.		<i>Jefferson, Ill.</i>
Eugene Herbert Robertson,	B. L.	10 4-5	<i>Ogden Centre.</i>
James Robertson,	B. S.	5	<i>Dayton, W. T.</i>
Opal Robeson,	Ph. B.	7	<i>Arcanum, O.</i>
Edward Van Dyke Robinson,	B. L.	11 3-5	<i>Ann Arbor.</i>
Everett Charles Rockwood,	Ph. B.	20 1-5	<i>Ottawa, Ill.</i>
Frank Adolph Roda,	B.S.(M.E.)	10 4-5	<i>Rochester, N. Y.</i>
Ashley Colt Rogers,	Ph. B.		<i>Oak Park, Ill.</i>
John Randolph Rogers,	B. S.(Chem.)	13 3-5	<i>Rome, Italy.</i>
Wallace Brown Rogers,	A. B.		<i>Clinton, Ia.</i>
Charles Whitall Root,	A. B.	10	<i>Ann Arbor.</i>
Gertrude Belle Rose,	A. B.	19 3-5	<i>Ann Arbor.</i>
Lillie Emma Rosewarne,	Ph. B.	19 4-5	<i>Decatur.</i>
Filibert Roth,	B. S.	20	<i>Ann Arbor.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
William Philander Rounds,	B.S.(C.E.)	20	Chicago, Ill.
George Herbert Rowe,	B. L.	6 1-5	Fort Wayne, Ind.
Cora Maria Rowell,	Ph. B.	10 2-5	Bloomington, Ill.
Arthur Eli Rowley,	Ph. B.	20 2-5	North Fairfield, O.
Merib Rowley,	A. B.	15	Adrian.
John Hiram Ruckman,	B. S.(Mech. E.)		Saline.
George Fred Rush,	Ph. B.	20 1-5	Chicago, Ill.
Louis Carlton Sabin,	B.S.(C.E.)	13 4-5	Memphis.
Homer Mason Sackett,	B.S.(Mech.E.)	23	Waverly, Ill.
Robert Lemuel Sackett,	B. S. (C.E.)	7 1-5	Mt. Clemens.
Homer Erwin Safford,	Ph. B.		Plymouth.
Kate Sagendorph,	B. L.		Charlotte.
Annie Ethel Sales,	B. L.	6 1-5	Gregory.
George Whiting Sanborn,	Ph. B.		St. Clair.
Mary Eliza Sanborn,	Ph. B.	4 4-5	Port Huron.
Henry Arthur Sanders,	A. B.	7 4-5	Livermore, Me.
Carl Schlenker,	A. B.		Toledo, O.
Oscar Frederick Schmid,	Ph. B.	19 4-5	Ann Arbor.
Alfred William Scobey,	B. L.		Kankakee, Ill.
Sylvester Henry Scovel,	B.S.(Mech. E.)	4	Wooster, O.
Harry Rogers Seager,	Ph. B.	13 4-5	Ann Arbor.
Charles J. Search,	A. B.	19 3-5	Ann Arbor.
Lewis Severance,	A. B.	8	Walled Lake.
Thomas Chalkley Severance, Jr.,	A. B.	18 2-5	Walled Lake.
Paul Henry Seymour,	B. S. (Chem.)		La Porte, Ind.
Walter Webster Seymour,	B.S.(C.E.)	14	La Porte, Ind.
Albert Morton Shaw,	B. S.	25	Coesse, Ind.
Genevieve Martha Sheehan,	B. L.		Niles.
Hudson Sheldon,	A. B.	12 3-5	Owosso.
Albert Laverne Shepard,	Ph. B.	19 2-5	Spencerport, N. Y.
Ida Mae Ives Sherman,	B. L.	5 2-5	Charlotte.
Penoyer Levi Sherman, Jr.,	B. S.	6 2-5	Chicago, Ill.
Samuel Sherman,	B. S.	6 2-5	Chicago, Ill.
Frederic Lang Sherwin,	Ph. B.		Leadville, Col.
Will Hittell Sherzer,	B. S.	19	Saginaw.
Lizzie Ide Shiell,	A. B.	19 3-5	Detroit.
Herbert Bradish Shoemaker,	Ph. B.	6 2-5	Ann Arbor.
Louis Henry Shoemaker,	B.S.(C.E.)	18 4-5	Ann Arbor.
Walter Fulton Slocum,	B. L.	3	Chicago, Ill.
James Burt Smalley,	B. S.(Mech.E.)	1	Bay City.
Albert Henry Smith,	B.S.(C.E.)	15 4-5	Elkhart, Ind.
Edward Hurd Smith,	Ph. B.	6 2-5	Detroit.
Edwin Merrill Smith,	B. S. (C. E.)		Chicago, Ill.
Evelyn Amanda Smith,	A. B.	11 3-5	Ann Arbor.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Frank Carpenter Smith,	A. B.		<i>St. Paul, Minn.</i>
Frank Clemes Smith,	B.S.(M.E.)19		<i>Bessemer.</i>
Frederic Latta Smith,	Ph. B.	12 3-5	<i>Lansing.</i>
Harry Tyler Smith,	A. B.		<i>Detroit.</i>
Herbert Scott Smith,	A. B.	5 3-5	<i>St. Paul, Minn.</i>
Oliver Charles Smith,	B.S.(C.E.)12	3-5	<i>Flint.</i>
Richard Root Smith,	A. B.		<i>Grand Rapids.</i>
Warren Hadley Smith,	Ph. B.	19 1-5	<i>Ypsilanti.</i>
William Clive Smith,	Ph. B.		<i>Tioga, Pa.</i>
George Herbert Snow,	Ph. B.	12 4-5	<i>Winona, Minn.</i>
Josephine Eliza Sondericker,	A. B.	17	<i>Woodstock, Ill.</i>
LeRoy Southmayd,	B. S.		<i>Ann Arbor.</i>
Fred Bernard Spaulding,	A. B.	20 1-5	<i>Ann Arbor.</i>
Charles Carl Spencer,	B. L.	4 2-5	<i>Ann Arbor.</i>
Miranda Belle Sperry,	Ph. B.		<i>Ann Arbor.</i>
George Bowditch Springer,	B.S.(C.E.)13	1-5	<i>Chicago, Ill.</i>
Harmon Chamberlin St. Clair,	B. L.	20 3-5	<i>Bay City.</i>
Edward Marsh St. John,	B.S. (C. E.)		<i>Highland.</i>
Gordon Edward Stannard,	B.S.(Mech.E.)19	2-5	<i>Dexter.</i>
Annette Stayt,	B. S.	4 4-5	<i>Ann Arbor.</i>
Grace Adelle Stayt,	Ph. B.	5 4-5	<i>Ann Arbor.</i>
Henry Porter Stearns,	B. S.	13 2-5	<i>Adrian.</i>
Lettie Violet Stellberger,	A. B.	6 3-5	<i>Tonia.</i>
Edith Stevens,	B. L.	13 4-5	<i>Niles.</i>
Clement Richilieu Stickney,	A. B.	18 2-5	<i>Ann Arbor.</i>
Paul Edwin Stillman,	A. B.	8	<i>Jefferson, Ia.</i>
Walter Savage Stillman,	A. B.	20 3-5	<i>Council Bluffs, Ia.</i>
Edward Ambrose Stockwell,	B.S.(C.E.)18	2-5	<i>Cleveland, O.</i>
Albert Brodie Stone,	A. B.	18 2-5	<i>Fayetteville, Ark.</i>
Margaret Jennie Stuart,	A. B.	5 1-5	<i>Skaneateles, N. Y.</i>
John McDonald Stull,	B.S.(M.E.) 3	1-5	<i>Rochester, N. Y.</i>
Otho Sibley Stull,	B.S.(M.E.)17		<i>Rochester, N. Y.</i>
Frederick Bernard Sturm,	Ph. B.		<i>Saline.</i>
Katharine Eliza Sumner,	Ph. B.	4 2-5	<i>Toledo, O.</i>
Eliza Read Sunderland,	Ph. B.	U (6)	<i>Ann Arbor.</i>
Forest Glenwood Sweet,	Ph. B.	13 1-5	<i>Battle Creek.</i>
Brown Fred Swift,	B. S.		<i>Chicago, Ill.</i>
Oscar William Swift,	A. B.		<i>Allegan.</i>
Sallie Szold,	Ph. B.	5 1-5	<i>Peoria, Ill.</i>
James Ely Talley,	A. B.	17 4-5	<i>Brandywine Sum't, Pa.</i>
Charles Philender Taylor,	Ph. B.	20 3-5	<i>Ottawa, Ill.</i>
Lucien Sterling Taylor,	B. S.		<i>Ann Arbor.</i>
Rufus Calvin Thayer,	Ph. B.	4 2-5	<i>Northville.</i>
Ada Thomas,	A. B.		<i>Cassopolis.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Alvah Beech Thompson,	B. S.	17	<i>San José, Cal.</i>
Charles Hallett Thorne,	B. S. (Mech. E.)		<i>Chicago, Ill.</i>
Edgar Miller Thorpe,	Ph. B.	5 2-5	<i>Detroit.</i>
William Collett Tichenor,	A. B.		<i>Lebanon, O.</i>
Nina Marie Tobey,	B. L.		<i>Galesburgh.</i>
John Howard Todd,	A. B.		<i>Urbana, O.</i>
Charles Henry Towle,	B. S.		<i>Niobrara, Neb.</i>
Julius Curtis Travis,	B. L.		<i>La Porte, Ind.</i>
Albert Willis Tressler,	A. B.		<i>Karle, O.</i>
Samuel Mumford Trevellick,	Ph. B.		<i>Ann Arbor.</i>
Edward Henry Troy,	B. L.	8	<i>Caledonia.</i>
Lyman Benjamin Trumbull,	Ph. B.	5 3-5	<i>Sandstone.</i>
William Hall Turnbull,	A. B.	6 4-5	<i>Detroit.</i>
May Turner,	B. L.	23	<i>Saginaw.</i>
Gabriel Cooley Tuthill,	B.S.(C.E.)	6 2-5	<i>Ionia.</i>
Arthur J. Tuttle,	Ph. B.		<i>Leslie.</i>
Paul John Ullrich,	B. S.	3-5	<i>Mt Clemens.</i>
Edward Hamilton Vail,	B. L.		<i>Kankakee, Ill.</i>
John Arthur Van Arsdale,	A. B.	4 4-5	<i>Ann Arbor.</i>
Oswald Daniel Vandersluis,	A. B.	13 1-5	<i>Grand Rapids.</i>
Horace Van Deventer,	Ph. B.U. (5)		<i>Knoxville, Tenn.</i>
Hugh Flournoy Van Deventer,	B.S.(Mech.E.)	1 3-5	<i>Knoxville, Tenn.</i>
James Van Inwagen, Jr.,	B. L.		<i>Hinsdale, Ill.</i>
Raymond Elmoine Van Syckle,	B. S.	6 3-5	<i>Detroit.</i>
Charles Francis Vaughn,	Ph. B.		<i>Ann Arbor.</i>
Arthur Henry Veysey,	A. B.		<i>Battle Creek.</i>
Martin Voorhees,	A. B.	5 2-5	<i>Detroit.</i>
Gertrude Sibbald Wade,	Ph. B.	2 2-5	<i>Ann Arbor.</i>
Mulford Wade,	Ph. B.	10 2-5	<i>Cleveland, O.</i>
Joseph William Wakefield,	B. S. (C. E.)		<i>Wakefield, Ky.</i>
Harry Wiburt Wakelee,	B. L.	11 1-5	<i>Wheaton, Ill.</i>
Frank Banghart Walker,	Ph. B.	13	<i>Lapeer.</i>
George Morton Walker, Jr.,	B.S.(C.E.)	15 1-5	<i>Lawrence, Kan.</i>
Mary Eloise Walker,	A. B.		<i>St. Johns.</i>
Thaddeus Henry Walker,	B. S.	5	<i>Walkerville, Ont.</i>
William Edwin Walter,	A. B.	6 2-5	<i>Cleveland, O.</i>
Minnie Amelia Walton,	A. B.		<i>Cheboygan.</i>
Albert Walworth,	B. S.	6	<i>South Bend, Ind.</i>
Frank Alsworth Waples,	B.S.(Bio.)	18	<i>Ann Arbor.</i>
Carl Cleghorn Warden,	Ph. B.	4-5	<i>Ann Arbor.</i>
George Travelli Waring,	B. S. (C. E.)		<i>St. Louis, Mo.</i>
Charles Damuth Warner,	A. B.	4 4-5	<i>Battle Creek.</i>
Edward Dodge Warner,	B. L.	6	<i>Jackson.</i>
Cyrus Carleton Warren,	B.S.(Mech.E.)		<i>Hinsdale, Ill.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Eugene Clarence Warriner,	B. L.	6 1-5	<i>Paw Paw, Ill.</i>
Ella May Washburn,	A. B.		<i>Monroe.</i>
Fred Waterhouse,	B. S. (C. E.)		<i>Honolulu, Hawaiian Isl's.</i>
Marion Isabel Watrous,	B. L.		<i>Des Moines, Ia.</i>
Phillip Bernard Watrous,	B. L.		<i>Des Moines, Ia.</i>
Charles Henion Webster,	B.S.(C.E.)	18	<i>Ann Arbor.</i>
Charlotte Huntington Webster,	Ph. B.	6 4-5	<i>Middletown, N. Y.</i>
John Howard Wetmore,	B. L.	13 1-5	<i>Cheboygan.</i>
Sara Whedon,	A. B.	19 4-5	<i>Ann Arbor.</i>
Ellen Wheeler,	A. B.	6 2-5	<i>Kalamazoo.</i>
Benjamin Riddle Whipple,	A. B.		<i>Port Huron.</i>
Frank Bates Whipple,	A. B.		<i>Port Huron.</i>
Florence Ella Whitcomb,	B. L.	20 4-5	<i>Battle Creek.</i>
Philip Robert Whitman,	B.S.(M.E.)	20 2-5	<i>Ann Arbor.</i>
Edward Dana Wickes,	B.S.(Mech.E.)		<i>Helena, Mon.</i>
William Wilhartz,	B. L.	5 3-5	<i>Chicago, Ill.</i>
Edwin Conklin Wilkinson,	Ph. B.		<i>Marquette.</i>
Maud Wilkinson,	A. B.	14 1-5	<i>Tarrytown, N. Y.</i>
Thomas Lee Wilkinson,	B.S.(Mech.E.)	13	<i>Davenport, Ia.</i>
Gardiner Stewart Williams,	B.S.(C.E.)	24 3-5	<i>Saginaw.</i>
Mark William Williams,	A. B.	11 3-5	<i>Ann Arbor.</i>
Viola May Williams,	Ph. B.		<i>Ann Arbor.</i>
Frank Willits,	B. L.		<i>Pontiac.</i>
Edward Markley Wilson,	Ph. B.	6 1-5	<i>Wabash, Ind.</i>
Florence Edna Wilson,	Ph. B.	11 4-5	<i>Belding.</i>
Zada J. Wilson,	Ph. B.	20 1-5	<i>Belding.</i>
Horace Vaughn Winchell,	B. S.	22 2-5	<i>Minneapolis, Minn.</i>
Jennie Louise Wire,	Ph. B.	13 3-5	<i>Winslow, Ill.</i>
George Monroe Wisner,	B. S. (C. E.)		<i>Detroit.</i>
Jesse Monroe Wiswell,	B. L.		<i>Decatur, Ill.</i>
Robert Henry Wolcott,	B.S.(Bio.)	9 3-5	<i>Grand Rapids.</i>
Bertha Wolf,	Ph. B.		<i>Grand Rapids.</i>
Irving Mason Wolverton,	B.S.(C.E.)	13 2-5	<i>F'lint.</i>
Frederick Elias Wood,	A. B.		<i>Oak Park, Ill.</i>
James Burris Wood,	B. S.	20	<i>Pittsburgh, Pa.</i>
Leslie Henry Wood,	Ph. B.	5 2-5	<i>Owosso.</i>
Edvard James Woodworth,	A. B.	5 2-5	<i>Fort Wayne, Ind.</i>
Dean Conant Worcester,	A. B.	12 4-5	<i>Thetford, Vt.</i>
Grace Darlene Worrall,	B. L.		<i>Ann Arbor.</i>
Arlisle Margaret Young,	A. B.	23	<i>Grand Rapids.</i>
Lewis Smith Young,	B. L.	19 3-5	<i>Harvard, Ill.</i>
Ada Zarbell,	A. B.		<i>Chicago, Ill.</i>
Edwin Abraham Zumbro,	B.S.(Chem.)	15 3-5	<i>Purdin, Mo.</i>

STUDENTS NOT CANDIDATES FOR A DEGREE.

NAME.	RESIDENCE.
John Burns Alexander,	<i>Buchanan.</i>
Harry Lincoln Allen,	<i>Cleveland, O.</i>
Helen Eloise Ames,	<i>Ann Arbor.</i>
Elliott Talbot Austin,	<i>Ann Arbor.</i>
Charles Ebenezer Babcock,	<i>Necedah, Wis.</i>
Edwin Harrison Babcock,	<i>Monroe.</i>
Mary Baessler,	<i>Ann Arbor.</i>
Katharine Binnie Saunders Berger,	<i>Chicago, Ill.</i>
Joseph Biscomb,	<i>Grand Rapids.</i>
Edwin Almarian Blakeslee,	<i>Galion.</i>
Harry Walter Booth,	<i>Erie, Pa.</i>
Hattie Lucinda Bradley,	<i>Battle Creek.</i>
Mary Barbour Brown,	<i>St. Matthews, Ky.</i>
Sally Brown,	<i>St. Matthews, Ky.</i>
Ella Buck,	<i>Franklin Grove, Ill.</i>
Nellie Charlotte Burke,	<i>Galva, Ill.</i>
Mary Elizabeth Butler,	<i>Brooklyn, N. Y.</i>
Wolcott Hackley Butler, LL. B.,	<i>Allegan.</i>
Eleanor Montgomery West Carey,	<i>Brantford, Ont.</i>
Kittie Roberts Carlisle,	<i>East Saginaw.</i>
May Carpenter,	<i>Alpena.</i>
Lauren Duane Carr,	<i>Brayton, Dak.</i>
Juliaette Amanda Chamberlain,	<i>Perry, N. Y.</i>
Charles Vivian Childs,	<i>Camberley, England.</i>
Ardie Marian Clark,	<i>Ann Arbor.</i>
Eda May Clark,	<i>Ann Arbor.</i>
Benjamin Cluff, Jr.,	<i>Provo City, Utah.</i>
Will Henry Code,	<i>East Saginaw.</i>
Samuel Richard Cook,	<i>Ann Arbor.</i>
Elizabeth Cooke,	<i>Cedar Rapids, Ia.</i>
Benjamin Seelohm Coppock,	<i>Wabash, Ind.</i>
Edward Wilson Cressey,	<i>Detroit.</i>
Alice Phillips Denison,	<i>Ann Arbor.</i>
Clarence Elbert DePuy,	<i>Jackson.</i>
Minne Rebecca DePuy,	<i>Jackson.</i>
Thomas John Doughty,	<i>Matteawan, N. Y.</i>
Mary Edna Dowdigan,	<i>Ann Arbor.</i>
Frederick Trempe Ducharme,	<i>Detroit.</i>
John Murray Edson,	<i>Mount Vernon, Ind.</i>
William Frank Edwards,	<i>Ann Arbor.</i>
Ervin Edgar Ewell, Ph. C.,	<i>Washington.</i>
Bertha Helena Fairbanks,	<i>San Diego, Cal.</i>

NAME.	RESIDENCE.
Charles Edmund Filkins,	Burton.
George Mygatt Fisk,	Ashtabula, O.
George Everett Fitch,	Grand Rapids.
Helen Newell Fitch,	Ann Arbor.
Mary Alice Ford,	Lisbon, N. H.
Ethel Fountain,	Santa Rosa, Cal.
Katie May Gartner,	Wyandotte.
Harry George,	Jackson.
Andrew Ellsworth Gibson,	Ann Arbor.
Ada Murray Gilbert,	Ann Arbor.
Alice Annable Graves,	Bloomington, Ill.
Charles T. Griffin,	Ann Arbor.
Joseph Engle Haines,	Mickleton, N. J.
Nettie Clare Hinman,	Portland.
Mollie Priscilla Hobart,	Pontiac, Ill.
Albert Zeigler Horning,	La Grange, Ind.
George Mechlin Hosack,	Connellsville, Pa.
Charles Arthur Howell,	Detroit.
Joseph Howley,	Pittsburgh, Pa.
Marietta Hubbard,	Hinckley, Ill.
Gotthelf Charles Huber, M. D.,	Ann Arbor.
Ireton Jackson,	Lapeer.
Lottie Aurora Jackson,	Ann Arbor.
Harris Poe Johnson,	Chicago, Ill.
Isabel Kellogg,	Detroit.
Herbert Govert Keppel,	Zeeland.
Cora Lee Ladd,	Old Mission.
Clem Charles Lemon,	Ann Arbor.
W. Ellsworth Lindsey,	Mahomet, Ill.
Helen Florence Lonsbury,	Allegan.
Nathan Tallman Lovejoy,	Ogdensburg, N. Y.
Thomas Lyons,	Walla Walla, W. T.
Allan Campbell McDonald,	Black River.
Lincoln Macmillan,	Ann Arbor.
Horace Albert Macy,	Sheriden, Ind.
Eva Idel Mains,	Ann Arbor.
John Russell Marfield,	Winona, Minn.
Maude Matthews,	Kansas City, Mo.
Mattie McColl,	Delhi Mills.
Wilbur Middlekauff,	Forreston, Ill.
Charles Vernon Miles,	Jerseyville, Ill.
Aura Miller,	Ann Arbor.
Charles Dayton Moore,	White Lake.
Helen Brown Muir,	Erie.

NAME.	RESIDENCE.
James Burton Nelson,	<i>Bloomington, Ind.</i>
Charles Solomon Northrop, LL. B.,	<i>Port Huron.</i>
Frank Burt Olney,	<i>Ludington.</i>
Ellen O'Loughlin,	<i>Hopkinton, Mass.</i>
Ella Lewis Palmer,	<i>Jackson.</i>
Herman Adolph Passolt, Ph. C.,	<i>East Saginaw.</i>
Newton Barris Pierce,	<i>Ludington.</i>
Zuell Preston,	<i>Wilmington, Del.</i>
Jennie May Price,	<i>Jackson.</i>
Arch Stuart Ralph,	<i>Ann Arbor.</i>
Harry Chauncey Reiner,	<i>Keokuk, Ia.</i>
Jennie Richards,	<i>Opechee.</i>
George Atla Robinson,	<i>Detroit.</i>
Pete Whitcome Ross,	<i>Mason, O.</i>
William Harvey Rush,	<i>Greenville, O.</i>
Ralph Sage,	<i>St. Johns.</i>
Frederick William Schettler,	<i>Kalamazoo.</i>
Julius Otto Schlotterbeck, Ph. C.,	<i>Ann Arbor.</i>
Annie Amelia Schryver,	<i>Ann Arbor.</i>
Ranney Converse Scott,	<i>Ann Arbor.</i>
Edith Lois Sheffield,	<i>Battle Creek.</i>
Louis Albert Shultz,	<i>Nora, Ill.</i>
Laura Eunice Sprague,	<i>Naples, N. Y.</i>
Frank Alexander Steiger,	<i>Vacaville, Cal.</i>
Cornelia Steketee,	<i>Grand Rapids.</i>
Amoretta Louise Stevens,	<i>Ann Arbor.</i>
Sophonra Leland Stevens,	<i>Ann Arbor.</i>
Fred Carl Struve,	<i>Seattle, W. T.</i>
Miner Cole Taft,	<i>Kalamazoo.</i>
Seiichi Tokito,	<i>Tokio, Japan.</i>
Lewis Lothrop Trowbridge,	<i>Lewiston, N. Y.</i>
Richard Fletcher Van Heusen,	<i>Albany, N. Y.</i>
Norman Swift Waite,	<i>Toledo, O.</i>
Riuse Watanabe,	<i>Neegata Ken, Japan.</i>
Joseph A. Watson,	<i>Coldwater.</i>
George Alexander Wheeler,	<i>Northfield, Minn.</i>
Charles Gustavus Wicker, Jr.,	<i>Chicago, Ill.</i>
Thomas Elmer Will,	<i>Springfield, Ill.</i>
Seth Clark Wilson,	<i>Alma, Ill.</i>
John Benjamin Wisely,	<i>Terre Haute, Ind.</i>
Lizzie Davis Wood,	<i>Mt. Pleasant, Pa.</i>
Nathan Putnam Wood,	<i>Dubuque, Ia.</i>
Anna Olivia Yeaton,	<i>Winona, Minn.</i>
Rei kichi Yoshida,	<i>Fukuoka Ken, Japan.</i>

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OF
Medicine and Surgery.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

CORYDON L. FORD, M. D., LL. D.,

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HENRY SEWALL, PH. D., M. D.,

WILLIAM J. HERDMAN, PH. B., M. D.,

VICTOR C. VAUGHAN, PH. D., M. D.,

CHARLES H. STOWELL, M. D.,

HENEAGE GIBBES, M. D.,

HENRY F. LYSTER, A. M., M. D.,

JAMES N. MARTIN, PH. M., M. D.,

BARCLAY T. TRUEBLOOD, PH. D., M. D.,

JOSEPH W. WARREN, A. B., M. D.,

FREDERICK G. NOVY, M. S.,

CONRAD GEORG, M. D.,

* ELMER SANFORD, B. S.

HENRY WADE ROGERS, A. M.,

Lecturer on the Law relating to Physicians.

CHARLES K. MCGEE, A. B.,

WILLIAM A. CAMPBELL, M. D.,

SECRETARY.

GOTTHELF C. HUBER, M. D.,

* Died February 15, 1889.

GUSTAVE A. DEUCHER, M. D.,
 JOHN F. ABBOTT, M. D.,
 GEORGE H. CHAFFEE, M. D.,
 GEORGE H. CONKLIN, M. D.,
 JAMES G. LYNDS, M. D.,
 BERTHA VAN HOOSER, A. B., M. D.

STUDENTS.

RESIDENT GRADUATES.

NAME.	RESIDENCE.
Rolla S. Armstrong, M. D.,	<i>Chelsea.</i>
George Hall Conklin, M. D.,	<i>Ann Arbor.</i>
Gustave Adolph Deucher, M. D., Long Island College Hospital.	<i>Ann Arbor.</i>
George Washington Green, M. D.,	<i>Ann Arbor.</i>
Bishop Burtch Sudworth, M. D.,	<i>Ann Arbor.</i>

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Christopher Adamson,	<i>Morden, Manitoba,</i>	Faculty.
Adrian Richard Alfred,	<i>Jeddo,</i>	Faculty.
Leighton Pine Allen,	<i>South Bend, Ind.,</i>	Faculty.
Bion Arnold,	<i>Ypsilanti,</i>	Faculty.
Lizzie Daniel Rose Atkinson,	<i>West Newton, Mass.,</i>	Faculty.
Eunice Jemima Avery,	<i>Hillsdale,</i>	Faculty.
Thomas James Avery,	<i>Ann Arbor,</i>	Faculty.
Thomas Stewart Blair,	<i>Chambersburgh, Pa.,</i>	George S. Hull.
John Alexander Blake,	<i>Surry, N. B.,</i>	Faculty.
Carroll Osborne Boyce,	<i>Auburn, N. Y.,</i>	J. P. Creveling.
George Johnson Boyd,	<i>Black Hawk, Pa.,</i>	Lane and Palmer.
John Ackley Boylan,	<i>Ann Arbor,</i>	Faculty.
George Alfred Bradburn,	<i>Tilsonburg, Ont.,</i>	E. X. Amoss.
James Ritchison Breakey,	<i>Ann Arbor,</i>	W. F. Breakey.
Mary Brown,	<i>Detroit,</i>	Faculty.
Mathilde Buck,	<i>Philadelphia, Pa.,</i>	Faculty.
Henry Clay Burcham,	<i>Scott Town, O.,</i>	D. M. Thomas.
Charles Newell Burton,	<i>Union City,</i>	Faculty.
Francis Henry Callow, B. S., Hillsdale College.	<i>Paw Paw,</i>	E. B. Dunning.
Harry Lee Canright,	<i>Battle Creek,</i>	Faculty.
Charles Ogden Cartwright,	<i>Fowlerville,</i>	A. R. Ingram.

NAME.	RESIDENCE.	PRECEPTOR.
Elizabeth Janette Child,	<i>Bethel, Vt.,</i>	Faculty.
James Edward Childs,	<i>Temple, N. H.,</i>	Faculty.
Cassius Mentor Coldren,	<i>Hillsdale,</i>	Faculty.
William S. Connery,	<i>East Saginaw,</i>	C. H. Sample.
David Goldthwait Coolidge,	<i>Orange, Mass.,</i>	Faculty.
George Lanning Cramer,	<i>Burton,</i>	Faculty.
Charles Stanley Crane,	<i>Bathgate, Dak.,</i>	Faculty.
John Sedgwick Dean,	<i>South Lyon,</i>	Faculty.
Will Henry Dodge,	<i>Panama, N. Y.,</i>	William E. Dodge.
Presca Isaac Edwards,	<i>Jackson,</i>	W. A. Gibson.
William Charles Elliott,	<i>Pontiac,</i>	Faculty.
Fred W. Essig,	<i>Owosso,</i>	Faculty.
Jessica White Findlay,	<i>Toronto, Ont.,</i>	Faculty.
Corydon Lavine Ford,	<i>Dundee,</i>	H. C. Wyman & G. C. Richardson.
Charles Henry Fowler, A. B.,	<i>Detroit;</i>	C. S. Pratt.
Lincoln University.		
Christian Seehuusen Fries,	<i>Altoona, Pa.,</i>	Faculty.
James Skiffington Grant,	<i>St. Stephen, N. B.,</i>	W. T. Black.
John N. Green,	<i>Iosco,</i>	D. M. Green.
Fanny Sarah Crossett Hall,	<i>Ithaca, N. Y.,</i>	Faculty.
Franklin Pierce Hannon,	<i>Warsaw, N. Y.,</i>	Faculty.
Ernestine Julia Hicks,	<i>Battle Creek,</i>	W. J. Fairfield.
Elden William Hills,	<i>Petoskey,</i>	W. J. Herdman.
Andrew John Hoenes,	<i>Battle Creek,</i>	Faculty.
Katherine Quane Holden,	<i>Jamestown, Dak.,</i>	D. Baldwin.
Peter William Holleman, A. B.,	<i>Holland,</i>	Faculty.
Hope College.		
Alex F. Irwin,	<i>Chatham, Ont.,</i>	Holmes & McKeough.
John Linn Irwin, Ph. C.,	<i>Detroit,</i>	Faculty.
George Orlo Jefferson,	<i>Mankato, Minn.,</i>	J. W. Andrews.
Cornelius Adrian Johnson,	<i>Grand Rapids,</i>	S. C. Graves.
Walter James Johnson,	<i>Oscoda,</i>	S. A. Manzer.
John William Keating,	<i>Ann Arbor,</i>	Faculty.
Lewis Hasbrouck Kemble,	<i>Stone Ridge, N. Y.,</i>	Faculty.
Fannie Elizabeth Kyle,	<i>Champaign, Ill.,</i>	Faculty.
Andrew Stewart Lobingier, A. B.,	<i>Mt. Pleasant, Pa.,</i>	F. L. Marsh.
Willis Allen McConkie,	<i>Walton,</i>	J. J. McConkie.
Archibald McEacheran,	<i>Crinan, Ont.,</i>	Faculty.
Charles McGregor,	<i>Dayton, O.,</i>	Faculty.
Harry McKennan,	<i>Herkimer, N. Y.,</i>	H. McKennan.
George Stewart McPherson,	<i>Toronto, Ont.,</i>	Faculty.
Andrew Milton Miller,	<i>Ann Arbor,</i>	Faculty.
William Levi Moore,	<i>Hastings,</i>	G. W. Lowry.
Perry Harris Munger,	<i>Alpha, O.,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Walter Starnes Nash,	Winchester, Ky.,	J. A. Nash.
Mary Anna Norton,	Detroit,	Faculty.
Clara Augusta Oswald,	Ann Arbor,	Faculty.
Ernest Henry Parker,	Osawatomie, Kan.,	A. H. Knapp.
John Allen Parks,	Utica, O.,	J. W. McMillen.
Edward Peirce,	New Bedford, Mass.,	Faculty.
Samuel Lee Probert,	St. Charles, Ill.,	H. Y. Longacre.
Frank Rainie, B. S.,	Senecaville, O.,	A. B. Cain.
North Western Ohio University.		
Sylvanus Robillard,	Wyoming, Ont.,	A. E. Harvey.
George Austin Rowe,	Waterloo,	Faculty.
George John Schneider,	Woodstock, Ill.,	D. C. Green.
Scott Searles,	Nicollet, Minn.,	Faculty.
Howard Sedgwick,	Peoria, Ill.,	Faculty.
Albert William Sherman,	Ann Arbor,	Faculty.
Boghos Tevan Simonian, A. B.,	Palu, Turkey,	Faculty.
Armenia College.		
William Milton Slaght, A. B.,	Grand Blanc,	A. Slaght.
Olivet College.		
George Slocum,	Sherwood, N. Y.,	B. A. Fordyce.
Fred Heman Spaulding,	Wayland,	H. J. Turner.
Minnie Ellen Stacks,	Crary's Mills, N. Y.,	G. G. Monroe.
Edgar Tripp Stephenson,	Adrian,	R. Stephenson.
Hugh Seymour Townsend,	Saline,	W. J. Herdman.
Wadsworth Warren, A. B.,	Lansing,	Faculty.
Olivet College.		
Emanuel Sherman Wenger,	Mendon, Neb.,	Faculty.
William Bennajah Watts,	Unadilla,	Faculty.
Horace Wilcox,	Wakefield, R. I.,	J. A. Wilcox.
Samuel Ellsworth Yoder,	Hawpatch, Ind.,	Iris J. Vaughan.

SECOND YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Edwin Sawyer Antisdale, B.S.,	Nottawa,	Faculty.
Michigan Agricultural College.		
Lyle Cholwell Bacon,	Niles,	Faculty.
Oscar Baert,	Zeeland,	Johnson & Boise.
Cornelius Arthur Barnette,	Ogdensburg, N. Y.,	C. C. & J. W. Benton.
John A. Barnette,	Potsdam, N. Y.,	D. W. Finnemore.
Merritt Grant Bassett,	Saline,	Faculty.
George Bates,	Arkona, Ont.,	W. J. Teasdale.
Thekla Natalie Bengel,	Hannibal, Mo.,	Faculty.
Joseph D. Bennett,	Litchfield,	L. A. Howard.

NAME.	RESIDENCE.	PRECEPTOR.
Joseph Esterbrook Bennett,	<i>Wayne,</i>	E. O. Bennett.
Milo Jason Bradley,	<i>Reed City,</i>	Morse Stewart, Jr.
Frank Homes Brown,	<i>Dansville, N. Y.,</i>	F. M. Perine.
Francis Marion Bruner, Jr.,	<i>Eureka, Ill.,</i>	N. B. Crawford.
Joseph Hooper Callbreath,	<i>White Lake, N. Y.,</i>	Faculty.
Angus Raymond Carton,	<i>Ackley, Ia.,</i>	Faculty.
Delia Lucretia Chapin,	<i>Granby, Mass.,</i>	Elizabeth L. Peck.
James Trent Christison,	<i>Ingersoll, Ont.,</i>	E. C. Eshelby.
Daniel Conley,	<i>Lapeer,</i>	E. Conley.
William Cleland Conley,	<i>Nashville,</i>	Faculty.
Rufus James Coultas, B. S.,	<i>Virden, Ill.,</i>	Faculty.
Illinois College.		
Edward Wirt Cox,	<i>Cox's Landing, W. Va.,</i>	Faculty.
George Clinton Crandall, B. S.,	<i>Linden,</i>	Faculty.
Michigan Agricultural College.		
Arthur Pearl Crofts,	<i>Grass Lake,</i>	Mahlon H. Raymond.
Elmer Arpad DeLipsey,	<i>Tisza Fiired, Hungary.</i>	J. Karal.
Fred Bassett Edwards,	<i>Flint,</i>	Faculty.
Charles Faber,	<i>Pulaski, O.,</i>	Long & Riggs.
Robert Cleland Fair,	<i>Port Huron,</i>	Faculty.
George Hill Ferguson,	<i>Gobles,</i>	Faculty.
Mary Graves Finch,	<i>Gladwin,</i>	Faculty.
Arthur Ferdinand Fischer, B.S.,	<i>Sherrills, Ia.,</i>	Faculty.
German English College.		
John Fleming,	<i>Dexter,</i>	Faculty.
William M. Fowler,	<i>Bright, Ont.,</i>	H. H. Scott.
Conway Alonzo Frost,	<i>Detroit,</i>	G. P. Andrews.
George Edward Frothingham, Jr.,	<i>Ann Arbor,</i>	G. E. Frothingham.
Willie Clarence Gates,	<i>Clifford, Pa.,</i>	Faculty.
George Clifton Gay,	<i>Eagle Bridge, N. Y.,</i>	Faculty.
Charles Augustus Gottman,	<i>Beech,</i>	Faculty.
John Gould,	<i>Colorado Springs, Col.,</i>	Faculty.
Samuel H. Graham,	<i>Cedar Falls, Ia.,</i>	Faculty.
Charles Edward Greene,	<i>Port Huron,</i>	Faculty.
Charles Lyman Greene,	<i>Ann Arbor,</i>	G. E. Frothingham.
Mary Theresa Greene,	<i>Pike, N. Y.,</i>	Faculty.
Elmer Ellsworth Hagler,	<i>Virden, Ill.,</i>	Faculty.
Emmett Austin Hall,	<i>Folk, O.,</i>	S. B. McGarran.
Delphine Hanna,	<i>Fairport, N. Y.,</i>	Faculty.
Emma Wheat Hastings,	<i>Quincy,</i>	E. A. Follansbee.
Wilber Stephen Henderson,	<i>Port Huron,</i>	Faculty.
Eugene P. Hickok, A. B.,	<i>Owatonna, Minn.,</i>	E. M. Morehouse.
Carlton College.		
Minnie Agnes Howard,	<i>Kalamazoo,</i>	Faculty.
John Gerrit Huizinga,	<i>Holland,</i>	T. G. Huizinga.

NAME.	RESIDENCE.	PRECEPTOR.
George Malcolm Hull,	<i>Brighton,</i>	Faculty.
Albert Milton Humber,	<i>Dundee,</i>	K. Gunsolus.
John H. Hunt,	<i>Burrton, Kan.,</i>	Faculty.
George William Ingham,	<i>Algona, Ia.,</i>	Faculty.
Joseph Philip Jones,	<i>Dundee,</i>	Faculty.
Melvin Emmanuel Johnson,	<i>Paxton, Ill.,</i>	Faculty.
Napoleon Dudley Kean,	<i>Olathe, Kan.,</i>	J. Q. Egelston.
George Frederic Keiper, A. B.,	<i>LaFayette, Ind.,</i>	C. B. Keiper & G. F. Beasley.
De Pauw University.		
Mary Knauf,	<i>Sylvan,</i>	Faculty.
Harry Pearce Lakin,	<i>Wheeling, W. Va.</i>	Samuel L. Jepson.
Milton Jennea Longworth,	<i>Spencerville, O.,</i>	J. B. Funk.
Asbury Nelson Loper, B. S.,	<i>Kossuth, Ia.,</i>	D. W. Lunbeck.
Iowa Wesleyan University.		
Frank D. Lydick,	<i>Paris, Ill.,</i>	Faculty.
Lilly MacGowan,	<i>West Liberty, Ia.,</i>	Faculty.
Alexander MacRae,	<i>Lake Linden,</i>	John MacRae.
John Jacob Marker,	<i>Wayne,</i>	Thomas Morrison.
Ettie McCaughna,	<i>Ann Arbor,</i>	Faculty.
Mary McConahy,	<i>Durham, Wis.,</i>	Faculty.
Allan J. McDonald,	<i>Black River,</i>	Faculty.
William Arthur McGugan,	<i>Newbury, Ont.,</i>	Faculty.
Eva Elizabeth McKnight,	<i>Sterling Valley, N. Y.,</i>	Faculty.
William Goldsmith McLachlan,	<i>Wardsville, Ont.,</i>	Faculty.
Malcolm Grame McNiven,	<i>Blenheim, Ont.,</i>	Faculty.
Elizabeth McNutt,	<i>Hastings,</i>	Faculty.
Louis Kuichling Mezger,	<i>Ann Arbor,</i>	Faculty.
David Henry Miller,	<i>Lacey,</i>	A. L. Van Horn.
Robert Eugene Miller,	<i>Leyden, N. Y.,</i>	Faculty.
Willis L. Moore,	<i>Hillsdale,</i>	Faculty.
John Hermann Mowers,	<i>Laingsburg,</i>	Faculty.
Mary Elizabeth Newcomb,	<i>Blissfield,</i>	Faculty.
Ada Maria Norris, A. B.,	<i>Comstock,</i>	Faculty.
Olivet College.		
Caleb Stanton O'Brien,	<i>Benton, Pa.,</i>	T. C. McHenry.
Edgar Warren Oswald,	<i>Ann Arbor,</i>	Faculty.
Charles Allen Otis,	<i>St. Paul, Minn.,</i>	Smith & Abbott.
Judson Albert Palmer,	<i>Sheiland, Ont.,</i>	Faculty.
Benjamin Franklin Parrish,	<i>Midway, Ky.,</i>	Faculty.
William Mason Payne,	<i>Hillsdale,</i>	Faculty.
William Philip Pfisterer,	<i>New Ulm, Minn.,</i>	Faculty.
Francis Malcolm Phillips,	<i>Salina, Kan.,</i>	Faculty.
Adelle Priscilla Pierce, A. M.,	<i>Saginaw,</i>	Faculty.
Albion College.		

NAME.	RESIDENCE.	PRECEPTOR.
Mary Hannah Ratcliffe,	<i>Medina, N. Y.,</i>	Faculty.
Charles Reitz,	<i>Union Hill, N. Y.,</i>	J. S. Brandt.
Harriet Alleyne Rice, A. B.,	<i>Newport, R. I.,</i>	Faculty.
Wellesley College.		
Robert Edward Lee Rodgers, A. B.,	<i>Millsboro, Pa.,</i>	S. S. Rodgers.
Trinity College.		
Arthur Sidney Rogers, Ph. C.,	<i>Vassar,</i>	R. Morris.
Arthur Shoudy Rowley,	<i>Kalamazoo,</i>	Faculty.
James Bringham Ryan,	<i>Virden, Ill.,</i>	Faculty.
James Newton Saint,	<i>East Liverpool, O.,</i>	A. S. Brubaker.
Walter Neale Salisbury,	<i>Midland,</i>	A. D. Salisbury.
Willard Clark Sanford, B.S. (Chem.),	<i>Marengo, Ill.,</i>	Faculty.
Arthur W. Scidmore,	<i>Grass Lake,</i>	Mahlon H. Raymond.
Charles Shickle,	<i>Carland,</i>	J. H. Travis.
Roland Edward Skeel,	<i>Cleveland, O.,</i>	Faculty.
James Ephraim Smedley,	<i>Belvidere, Ill.,</i>	Faculty.
Charles Sohn,	<i>Woodlawn, Pa.,</i>	Faculty.
George Henry Thomas Sparling,	<i>Seattle, W. T.,</i>	Faculty.
Patrick Joseph Sullivan,	<i>Cannonsburg,</i>	Faculty.
Arthur John Taylor,	<i>Hop Bottom, Pa.,</i>	Faculty.
John Erskine Taylor,	<i>Waterloo, Ont.,</i>	C. Noecker.
William Sherman Taylor,	<i>Ann Arbor,</i>	Faculty.
Charles Edward Thomas,	<i>St. Clair,</i>	Faculty.
Edwin Stuart Tisdale,	<i>Simcoe, Ont.,</i>	Faculty.
Alice Van Hoosen, A. B.,	<i>Rochester,</i>	Bertha Van Hoosen.
William Evert Visscher, A. B.,	<i>Holland,</i>	Faculty.
Hope College.		
James Henry Waite,	<i>Centre White Creek, N. Y.,</i>	Faculty.
Fred Eugene Warren,	<i>Dexter,</i>	Faculty.
Stephen Andrew Whinery,	<i>Grand Rapids,</i>	Faculty.
Everett Jerome Whitehead, A. B.,	<i>Howell,</i>	J. W. Morton.
Agnes Clara Weaver, Ph. B.,	<i>East Saginaw,</i>	Faculty.
Cressy Livingston Wilbur, Ph. B.,	<i>Hillsdale,</i>	Charles W. Wilbor.
Hillsdale College.		
John Russell Wilde,	<i>New York, N. Y.,</i>	Faculty.
Curtis Carrington Williams,	<i>New Lisbon, O.,</i>	L. O. Williams.
Clarence Benjamin Wilson,	<i>Bradford, Vt.,</i>	Faculty.
Freeman E. Wilson,	<i>Eden, Ont.,</i>	Harvey & Stanley.
Franklin Edward Wolfe,	<i>Ortonville,</i>	D. F. & G. W. Stone.
William D. Wood,	<i>Forest Grove, Ore.,</i>	Faculty.
Henry Middleton Woolman,	<i>Crosswicks, N. J.,</i>	C. L. Dey.

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Nelson Abbot,	<i>Lima, Ind.,</i>	Faculty.
Mary Louisa Ambrook,	<i>Boulder, Col.</i>	Faculty.
Cora Eliza Armstrong,	<i>Ottawa, Ill.,</i>	Charity A. Sanders.
Henri Stranahan Babcock,	<i>Warren, Pa.,</i>	Faculty.
James Otis Ballard, Ph. B., LaFayette College.	<i>Detroit,</i>	D. S. Campbell.
Joseph Grant Bartow,	<i>Williamston,</i>	Faculty.
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Guert Elmer Wilder,	<i>Chautauqua, N. Y.,</i>	Faculty.
Eli Cone Williams, A. B.,	<i>Ann Arbor,</i>	Faculty.
Clayton Willison,	<i>Hastings,</i>	E. H. Lathrop.
Miranda Poyer Wiswell, B. L.,	<i>Milford, Del.,</i>	Faculty.
Delaware College.		

College of Dental Surgery.

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 WILLIAM H. DORRANCE, D. D. S.,
 NEVILLE S. HOFF, D. D. S.,
 JAMES N. MARTIN, PH. M., M. D.

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NAME.	RESIDENCE.	PRECEPTOR.
Walter Lent Allen,	<i>Ann Arbor,</i>	Faculty.
Albert Edward Anderson,	<i>Maidstone, Eng.,</i>	A. E. Anderson.
Robert Burns Avery,	<i>Tunkhannock, Pa.,</i>	E. F. Avery.
Frank Irvin Ball,	<i>Fremont, O.,</i>	Faculty.
Walter Horace Booth,	<i>Pittsfield,</i>	Faculty.
Harry Fielden Briggs,	<i>Torquay, Eng.,</i>	F. H. Briggs.
Frank Seldon Buckley, A. B., Oberlin College.	<i>Ann Arbor,</i>	Faculty.
Merrill Danforth Bush,	<i>Watertown, N. Y.,</i>	C. W. Howard.
William John Bush,	<i>Ann Arbor,</i>	Faculty.
Charles Sumner Buttolph,	<i>Troy,</i>	H. F. Douglass.
William Calhoun,	<i>Urania,</i>	Faculty.
Leo David Camp, Jr.,	<i>Ann Arbor,</i>	Faculty.
George Benton Chester,	<i>Elkhart, Ind.,</i>	S. B. Short.
Charles Elias Collamer,	<i>Flint,</i>	Miller & Hutchins.
Charles Cook,	<i>South Haven,</i>	H. D. Cook.
George Henry Copp,	<i>Plainwell,</i>	F. E. Howe.
George Edward Courtney,	<i>St. Clair,</i>	W. A. Courtney.
Norman Kershaw Cox,	<i>Auckland, New Zealand,</i>	E. Cox & Son.
Manuel Vincent del Valle,	<i>San Jose, Porto Rico,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Rokus Christian Devries,	<i>Holland,</i>	F. G. Gillespie.
Arthur Aaron Deyoe,	<i>St. Clair,</i>	Faculty.
Frank Chester Dorrance,	<i>Ann Arbor,</i>	W. H. Dorrance.
Harry Goodrich Dunaven,	<i>Grand Rapids,</i>	L. Eaton.
Fred Edward Eberbach,	<i>Ann Arbor,</i>	W. W. Nichols.
Milton Marion Edmonson,	<i>Lexington, Ky.,</i>	Faculty.
Charles Henry Edwards,	<i>Ypsilanti,</i>	J. A. Watling.
Charles Hugo Farman,	<i>San Francisco, Cal.,</i>	J. J. Birge.
Fred Dawson Fisher,	<i>Skipton, Eng.,</i>	Faculty.
William Francis Gary,	<i>Fond du Lac, Wis.,</i>	B. H. Conlin.
John Joseph Giusti,	<i>San Francisco, Cal.,</i>	W. J. Younger.
Ida Gray,	<i>Cincinnati, O.,</i>	J. Taft.
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Walter Jesse Green,	<i>Ann Arbor,</i>	Faculty.
Harry Lawrence Hall,	<i>Ann Arbor,</i>	Faculty.
Louis Phillips Hall,	<i>Ann Arbor,</i>	Faculty.
Frank Douglass Harding,	<i>Randolph, N. Y.,</i>	J. N. Cowen.
George Byron Hayes, A. B.,	<i>Canandaigua, N. Y.,</i>	Gale & Watson.
Williams College.		
Clarence Eugene Henderson,	<i>Ann Arbor,</i>	Faculty.
Frank Sidney Henry,	<i>Jacksonville, Fla.,</i>	F. E. Buck.
William Carley Herbert,	<i>Detroit,</i>	C. S. Herbert.
George Arthur Holliday,	<i>Traverse City,</i>	E. L. Ashton.
Horace Nathaniel Holmes,	<i>Livermore, Cal.,</i>	Faculty.
Edgar Allen Honey,	<i>Charlotte,</i>	F. H. Honey.
William George Howley,	<i>Ann Arbor,</i>	Faculty.
Edy Randall Johnson,	<i>Akron, O.,</i>	Mason Chapman.
Jacob William Jungman,	<i>Cleveland, O.,</i>	J. R. Bell.
William Edward Kearns,	<i>Ann Arbor,</i>	Faculty.
John Barnet Keesing,	<i>Boston, Mass.,</i>	D. G. Williams.
Oscar Calm Kerlin,	<i>Greenville, O.,</i>	J. J. Little.
Reuben John Kirk,	<i>Genoa, O.,</i>	Faculty.
Vida Annette Latham,	<i>Manchester, Eng.,</i>	Frank A. Huet.
Melville Arthur Mason,	<i>Fort Wayne, Ind.,</i>	T. J. Mason.
Gorden Grant McCoy,	<i>Van Wert, O.,</i>	Faculty.
Carolyn Murray McElroy,	<i>Delaware, O.,</i>	Steeves & Mitchell.
Austin McGuire,	<i>Ann Arbor,</i>	Faculty.
Charles Shuter McIndoe,	<i>Wausau, Wis.,</i>	B. H. Conlin.
Pliny A. Mercer,	<i>Weston,</i>	W. S. Filley.
Chester Cleveland Merriman,	<i>Beloit, Wis.,</i>	J. A. W. Meyers.
Clinton Floyd Metcalf,	<i>Lansing, Ia.,</i>	Faculty.
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Kate De Peryam Moyle,	Central City, Col.,	H. A. Flynn.
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George Northcroft,	London, Eng.,	Mitchell & Crall.
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Henry Turner Osborne,	Markham, Ont.,	A. J. Robertson.
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James Andrew Oswald,	Ann Arbor,	Faculty.
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Arthur Mowry Potter,	South Lyon,	Faculty.
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Wilsie David Reed,	Manchester,	Faculty.
John Scott Rice, M. D.,	Laurel, Ind.,	Faculty.
Bellevue Hospital Medical College.		
Arthur Richardson,	Ann Arbor,	Faculty.
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Sumner Oliver Sawyer,	Kent, O.,	J. C. Waldron.
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Clinton Robert Scott,	Vicksburg,	W. W. Scott.
Charles Scudder,	Randolph, N. Y.,	Faculty.
Alice Lovyse Sherman,	Lake Geneva, Wis.,	Faculty.
Alfred Louis Sickler,	Detroit,	Faculty.
William Hall Sieberst,	San Francisco, Cal.,	G. A. Christman.
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Lewis Carlisle Thayer,	Northville,	Faculty.
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Gordon William Welch,	Ann Arbor,	W. H. Miller.
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NAME.	RESIDENCE.	PRECEPTOR.
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Paul Woosley,	<i>Battle Creek,</i>	R. M. Speer.

ADDENDA.

The following name should be inserted in the catalogue of students in the Department of Literature, Science, and the Arts:

NAME.	DEGREE.	COURSES.	RESIDENCE.
Lucius Edward Torrey,	B. L.	10 4-5	<i>Grand Rapids.</i>

The following name should be inserted in the catalogue of Second-Year Students in the Department of Medicine and Surgery:

NAME.	RESIDENCE.	PRECEPTOR.
Lotta Ruth Arwine,	<i>Columbus, Ind.,</i>	Faculty.

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SUMMARY OF STUDENTS.

Department of Literature, Science, and the Arts.

RESIDENT GRADUATES	41
GRADUATES STUDYING <i>in absentia</i>	24
CANDIDATES FOR A DEGREE	629
STUDENTS NOT CANDIDATES FOR A DEGREE	130 — 824

Department of Medicine and Surgery.

RESIDENT GRADUATES	5
THIRD YEAR STUDENTS	89
SECOND YEAR STUDENTS	128
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Department of Law.

SENIORS	149
JUNIORS	243
SPECIAL STUDENTS	8 — 400

School of Pharmacy.

RESIDENT GRADUATE	1
SECOND YEAR STUDENTS	48
FIRST YEAR STUDENTS	57 — 106

Homœopathic Medical College.

STUDENTS—Total in the College	73
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College of Dental Surgery.

STUDENTS—Total in the College	108.
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1882

SUMMARY BY STATES

AND BY DEPARTMENTS.

STATE OR COUNTRY.	Department of Literature, Science, and the Arts.	Department of Medicine and Surgery.	Department of Law.	School of Pharmacy.	Homoeopathic Medical College.	College of Dental Surgery.	Total.
Michigan.....	450	160	105	57	41	54	876
Illinois.....	122	21	39	4	1	1	188
Ohio.....	44	20	38	16	4	12	134
Indiana.....	38	15	29	6	3	3	94
New York.....	30	31	10	6	4	6	87
Iowa.....	18	13	16	3	1	2	53
Pennsylvania.....	12	21	13		4	1	51
Minnesota.....	15	10	10	1	3		39
Missouri.....	10	2	17	4			33
California.....	7		17	1	2	4	31
Kansas.....	4	6	10	3			23
Kentucky.....	6	3	12			2	23
Colorado.....	4	2	10			1	17
Wisconsin.....	5	1	5			6	17
Utah.....	7	2	5				14
Nebraska.....	4	1	8				13
Dakota.....	2	2	8				12
Massachusetts.....	2	6	1			2	11
Washington Territory.....	6	1	3				10
Vermont.....	1	4	1			1	7
New Hampshire.....	2	2	2				6
Arkansas.....	1	1	3				5
Connecticut.....	1	2		1	1		5
Idaho.....		1	4				5
New Jersey.....	3	1		1			5
Oregon.....	1	1	2		1		5
Tennessee.....	2		2	1			5
West Virginia.....		3	1				4
Delaware.....	1				2		3
Montana.....	1		2				3
Florida.....	1					1	2
Maine.....	2						2
Nevada.....		1	1				2
Rhode Island.....		2					2
Virginia.....			2				2
Arizona.....			1				1
District of Columbia.....	1						1
Louisiana.....		1					1
Maryland.....	1						1
North Carolina.....		1					1
Texas.....						1	1
Ontario.....	2	25	6	1	6	2	42
Japan.....	4		12				16
England.....	1	1				6	8
New Brunswick.....		3	1				4
Porto Rico.....		2				1	3
Italy.....	1					1	2
Manitoba.....		1	1				2
Province of Quebec.....			2				2
Germany.....				1			1
Hawaiian Islands.....	1						1
Hungary.....		1					1
Mexico.....	1						1
New Zealand.....						1	1
Nova Scotia.....			1				1
Russia.....	1						1
Turkey.....		1					1
Total.....	824	371	400	106	73	108	1,882

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UNIVERSITY OF MICHIGAN

— FOR —

1889-90.



ANN ARBOR, MICH.:
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CALENDAR

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ANNOUNCEMENTS FOR 1890-91.

1890.

- January 7. University Exercises resumed after Holiday Vacation.
- February 14. (Evening.) FIRST SEMESTER CLOSES.
- February 17. SECOND SEMESTER BEGINS.
- April 11. (Evening.) Recess begins, ending April 21 (evening).
- June 13, 14. *Examination for Admission to the School of Pharmacy.*
- June 21, 23. *Examination for Admission to the Department of Literature, Science, and the Arts.*
- June 22. *Baccalaureate Address.*
- June 24. *Class Day.*
- June 25. *Alumni Day.*
- June 26. COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY.
The Commencement Oration is to be delivered by HON. ANDREW D. WHITE, of Ithaca, N. Y.
Summer Vacation from June 26 to September 30.
- September 25-30. *Examination for Admission to the Department of Literature, Science, and the Arts.*
- September 29. *Examination for Admission to the College of Dental Surgery.*
- September 29-30. *Examination for Admission to the Department of Law, and to the School of Pharmacy.*
- September 30. *Examination for Admission to the Department of Medicine and Surgery, and to the Homœopathic Medical College.*
- October 1. FIRST SEMESTER BEGINS IN ALL DEPARTMENTS OF THE UNIVERSITY.
- November — Thanksgiving Recess of three days, beginning Tuesday evening, in all Departments of the University.
- December 19. (Evening.) Holiday Vacation begins in all Departments.

1891.

- January 6. Exercises resumed.
- February 13. (Evening.) FIRST SEMESTER CLOSES.
- February 16. SECOND SEMESTER BEGINS.
- April 10. (Evening.) Recess begins, ending April 20 (evening).
- June 25. COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY

1890.

JANUARY.							JULY.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
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19	20	21	22	23	24	25	20	21	22	23	24	25	26
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FEBRUARY.							AUGUST.						
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1891.

JANUARY.							JULY.						
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FEBRUARY.							AUGUST.						
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APRIL.							OCTOBER.						
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MAY.							NOVEMBER.						
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JUNE.							DECEMBER.						
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BOARD OF REGENTS.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

		TERM EXPIRES.
HON. ARTHUR M. CLARK,	<i>Lexington,</i>	Dec. 31, 1891.
HON. CHARLES J. WILLETT,	<i>St. Louis,</i>	" 1891.
HON. HERMANN KIEFER,	<i>Detroit,</i>	" 1893.
HON. CHARLES R. WHITMAN,	<i>Ann Arbor,</i>	" 1893.
HON. ROGER W. BUTTERFIELD,	<i>Grand Rapids,</i>	" 1895.
HON. CHARLES HEBARD,	<i>Pequaming,</i>	" 1895.
HON. CHARLES S. DRAPER,	<i>East Saginaw,</i>	" 1897.
HON. WILLIAM J. COCKER,	<i>Adrian,</i>	" 1897.

JAMES H. WADE,
SECRETARY AND STEWARD.

HARRISON SOULE,
TREASURER.

HON. JOSEPH ESTABROOK, A. M.,
SUPERINTENDENT OF PUBLIC INSTRUCTION.
(Office at Lansing.)

BOARD OF VISITORS.

HON. EDWIN F. UHL, A. M.,	<i>Grand Rapids.</i>
HON. JOHN ATKINSON, LL. B.,	<i>Detroit.</i>
PROF. CYRUS B. THOMAS, A. M.,	<i>East Saginaw.</i>

MEMBERS OF THE FACULTIES

AND OTHER OFFICERS.

PERMANENT APPOINTMENTS.*

- JAMES B. ANGELL, LL. D., PRESIDENT. South University Avenue.
- CORYDON L. FORD, M. D., LL. D., *Professor of Anatomy and Physiology, and Dean of the Department of Medicine and Surgery.* 64 Washtenaw Avenue.
- † HENRY S. FRIEZE, LL. D., *Professor of the Latin Language and Literature, and Dean of the Faculty of Literature, Science, and the Arts.* 4 Cornwell Place.
- ALBERT B. PRESCOTT, PH. D., M. D., *Director of the Chemical Laboratory, Professor of Organic Chemistry and of Pharmacy, and Dean of the School of Pharmacy.* 50 South Ingalls Street.
- REV. MARTIN L. D'OOGHE, LL. D., *Professor of the Greek Language and Literature.* Washtenaw Avenue.
- CHARLES E. GREENE, A. M., C. E., *Professor of Civil Engineering.* 37 William Street.
- WILLIAM H. PETTEE, A. M., *Professor of Mineralogy, Economic Geology, and Mining Engineering.* 52 Thompson Street.
- JONATHAN TAFT, M. D., D. D. S., *Professor of the Principles and Practice of Operative Dentistry, and Dean of the College of Dental Surgery.* 20 South University Avenue.
- JOHN A. WATLING, D. D. S., *Professor of Clinical and Mechanical Dentistry.* Huron Street, Ypsilanti.
- MARK W. HARRINGTON, A. M., *Professor of Astronomy, and Director of the Observatory.* Observatory.
- JOSEPH B. STEERE, PH. D., *Professor of Zoology.* South Ypsilanti Road.

* The names of Professors (including Librarian), Assistant Professors (including Superintendent of Shops), and other officers are placed in their appropriate divisions, according to length of continuous service with present rank.

† Professor Frieze, who had been connected with the University for a period of more than thirty-five years, died, after a short illness, on the 7th of December, 1889.

- EDWARD L. WALTER, PH. D., *Professor of Romance Languages and Literatures.* 93 South State Street.
- ALEXANDER WINCHELL, LL. D., *Professor of Geology and Palæontology.* 11 North University Avenue.
- ISAAC N. DEMMON, A. M., *Professor of English and Rhetoric.* 76 Washtenaw Avenue.
- WILLIAM H. DORRANCE, D. D. S., *Professor of Prosthetic Dentistry and Dental Metallurgy.* 42 South Ingalls Street.
- ALBERT H. PATTENGILL, A. M., *Professor of Greek.* 37 East Catherine Street.
- MORTIMER E. COOLEY, M. E., *Professor of Mechanical Engineering.* 32 Packard Street.
- WILLIAM J. HERDMAN, PH. B., M. D., *Professor of Practical Anatomy and Diseases of the Nervous System, and Demonstrator of Anatomy.* 48 East Huron Street.
- WOOSTER W. BEMAN, A. M., *Professor of Mathematics.* 19 South Fifth Street.
- HENRY WADE ROGERS, A. M., *Tappan Professor of Law, Professor of Roman Law, and Dean of the Department of Law.* 82 South State Street.
- VICTOR C. VAUGHAN, PH. D., M. D., *Professor of Hygiene and Physiological Chemistry, and Director of the Hygienic Laboratory.* 15 South State Street.
- HENRY L. OBETZ, M. D., *Professor of Surgery and Clinical Surgery, and Dean of the Homœopathic Medical College.* 139 First Street, Detroit.
- * THOMAS M. COOLEY, LL.D., *Professor of American History and Constitutional Law.* 76 South State Street.
- CHARLES S. DENISON, M. S., C. E., *Professor of Descriptive Geometry, Stereotomy, and Drawing.* 23 South Division Street.
- JAMES C. WOOD, M. D., *Professor of Obstetrics and Diseases of Women and Children in the Homœopathic Medical College.* 66 South Fourth Street.
- DANIEL A. McLACHLAN, M. D., *Professor of Ophthalmology, Otology, and Paedology in the Homœopathic Medical College.* 26 South Division Street.
- HENRY S. CARHART, A. M., *Professor of Physics.* 7 Monroe Street.

* Professor Cooley has leave of absence, but delivers a brief course of lectures on the law of inter-state commerce to advanced students in the Department of Law.

- LEVI T. GRIFFIN, A. M., *Fletcher Professor of Law.*
374 Cass Avenue, Detroit.
- RAYMOND C. DAVIS, A. M., *Librarian.* 61 Washtenaw Avenue.
- VOLNEY M. SPALDING, A. B., *Professor of Botany.*
50 Thompson Street.
- HENRY C. ADAMS, PH. D., *Professor of Political Economy
and Finance.* 28 South Division Street.
- CALVIN THOMAS, A. M., *Professor of Germanic Languages
and Literatures.* 22 Packard Street.
- WILLIAM P. WELLS, A. M., *Kent Professor of Law.*
104 Edmund Place, Detroit.
- HENEAGE GIBBES, M. D., *Professor of Pathology.* 16 Forest Avenue.
- BURKE A. HINSDALE, PH. D., *Professor of the Science and
the Art of Teaching.* 54 South University Avenue.
- HENRY F. LYSTER, A. M., M. D., *Professor of the Theory
and Practice of Medicine and Clinical Medicine.*
397 Jefferson Avenue, Detroit.
- RICHARD HUDSON, A. M., *Professor of History.*
40 South Ingalls Street.
- BRADLEY M. THOMPSON, M. S., LL. B., *Jay Professor of
Law.* 25 East University Avenue.
- ALBERT A. STANLEY, *Professor of Music.* 19 South Ingalls Street.
- JOHN DEWEY, PH. D., *Professor of Philosophy.* 15 Forest Avenue.
- FRANCIS W. KELSEY, PH. D., *Professor of Latin.*
55 East University Avenue.
- JEROME C. KNOWLTON, A. B., *Marshall Professor of Law.*
77 East Huron Street.
- CHARLES GATCHELL, M. D., *Professor of the Theory and
Practice of Medicine in the Homœopathic Medical Col-
lege.* 23 South Division Street.
- CHARLES S. MACK, M. D., *Professor of Materia Medica and
Therapeutics in the Homœopathic Medical College.*
Nickels' Block, 46 South State Street.
- CHARLES B. NANCREDE, M. D., *Professor of Surgery and
Clinical Surgery.* 2 Forest Avenue.
- FLEMMING CARROW, M. D., *Professor of Ophthalmic and
Aural Surgery and Clinical Ophthalmology.*
56 South University Avenue.

- OTIS C. JOHNSON, PH. C., A. M., *Professor of Applied Chemistry.* 52 South Thayer Street.
- JOSEPH B. DAVIS, C. E., *Assistant Professor of Civil Engineering.* 51 South Ingalls Street.
- NELVILLE S. HOFF, D. D. S., *Assistant Professor of Practical Dentistry.* 79 South State Street.
- ANDREW C. McLAUGHLIN, A. B., *Assistant Professor of History.* 23 Monroe Street.
- P. R. DE PONT, A. B., B. S., *Assistant Professor of French, and Registrar of the Department of Literature, Science, and the Arts.* 23 East Jefferson Street.
- LEO D. MINER, U. S. N., *Assistant Professor of Mechanical and Marine Engineering.* 57 Ann Street.
- CLARENCE G. TAYLOR, B. S., *Superintendent of Shops in Engineering Laboratory.* 20 South University Avenue.
- JACOB E. REIGHARD, PH. B., *Assistant Professor of Zoology.* 30 South Ingalls Street.
- THOMAS C. TRUEBLOOD, A. M., *Assistant Professor of Elocution.* 88 Hill Street.
- GEORGE HEMPL, PH. D., *Assistant Professor of English.* 41 Madison Street.
- ALVISO B. STEVENS, PH. C., *Instructor in Pharmacy.* 15 Church Street.
- CHARLES K. MCGEE, A. B., *Instructor in General Chemistry.* 33 South Thayer Street.
- GOTTHELF C. HUBER, M. D., *Instructor in Histology.* 23 Monroe Street.
- JAMES N. MARTIN, PH. M., M. D., *Lecturer on Oral Pathology and Surgery in the College of Dental Surgery.* 49 Liberty Street.
- WILLIAM A. CAMPBELL, M. D., *Assistant Demonstrator of Anatomy, and Secretary of the Faculty of the Department of Medicine and Surgery.* 21 South State Street.
- JOSEPH H. VANCE, LL. B., *Assistant Librarian, in charge of the Law Library.* Ann Arbor Town.

NON-RESIDENT LECTURERS ON SPECIAL TOPICS.

- HENRY B. BROWN, LL. D., *Lecturer on Admiralty Law, for 1889-90.* 712 Jefferson Avenue, Detroit.

WILLIAM G. HAMMOND, LL. D., *Lecturer on the History of Common Law, for 1889-90.* St. Louis, Mo.

JOHN W. LANGLEY, S. B., M. D., *Lecturer on the Metallurgy of Steel.* Pittsburgh, Pa.

APPOINTMENTS FOR 1889-90.

JAMES N. MARTIN, PH. M., M. D., *Acting Professor of Obstetrics and Diseases of Women and Children in the Department of Medicine and Surgery.* 49 Liberty Street.

PAUL C. FREER, M. D., PH. D., *Lecturer on General Chemistry.* 90 South State Street.

WILLIAM H. HOWELL, PH. D., *Lecturer on Physiology and Histology.* 28 East Jefferson Street.

FRANK N. COLE, PH. D., *Acting Assistant Professor of Mathematics.* 23 Packard Street.

FREDERICK G. NOVY, M. S., *Instructor in Hygiene.* 31 East Liberty Street.

CONRAD GEORG, M. D., *Instructor in Materia Medica and Therapeutics.* 87 Main Street.

ALEXANDER F. LANGE, A. M., *Instructor in German and Anglo-Saxon.* 23 North University Avenue.

WILLIAM W. CAMPBELL, B. S., *Instructor in Astronomy.* 28 Packard Street.

ALEXANDER ZIWET, C. E., *Instructor in Mathematics.* 57 East University Avenue.

GEORGE W. WHYTE, B. S., *Instructor in Metallurgy and Assaying.* 20 Thompson Street.

JOSEPH H. DRAKE, A. B., *Instructor in Latin.* 23 North University Avenue.

LEWIS A. RHOADES, A. M., *Instructor in German.* 57 East University Avenue.

PHILIPPE B. MARCOU, PH. D., *Instructor in French.* 85 South State Street.

CHARLES W. BELSER, A. B., *Instructor in German and French.* 46 Packard Street.

WILLIAM A. CAMPBELL, M. D., *Instructor in Anatomy.* 21 South State Street.

JAMES H. TUFTS, A. B., B. D., *Instructor in Philosophy.* 40 South Division Street.

- FRANK CLEMES SMITH, B. S., *Instructor in Quantitative Analysis.* 103 South Main Street.
- GEORGE W. PATTERSON, A. B., S. B., *Instructor in Electrical Engineering.* 40 South Ingalls Street.
- FRED N. SCOTT, PH. D., *Instructor in English.* 1 College Street.
- MELLEN W. HASKELL, PH. D., *Instructor in Mathematics.* 23 Packard Street.
- WILLIAM J. HUSSEY, B. S., *Instructor in Mathematics.* 32 East Jefferson Street.
- WILLIAM F. EDWARDS, *Accountant and Dispensing Clerk in the Chemical Laboratory.* 62 North Street.
- ERVIN E. EWELL, PH. C., *Assistant in Qualitative Analysis.* 7 North University Avenue.
- CHARLES P. BECKWITH, B. S., *Assistant in Qualitative Chemistry.* 18 Church Street.
- JULIUS O. SCHLOTTERBECK, PH. C., *Assistant in Pharmacognosy and Pharmacy.* 13 Forest Avenue.
- JOHN D. RIKER, B. S., *Assistant in Physiological Chemistry.* 60 East Washington Street.
- DAVID M. LICHTY, B. S., *Assistant in Qualitative Chemistry.* 7 North University Avenue.
- JOSEPH CLARK, *Steward of the Hospitals.* University Hospital.
- JAMES G. LYNDS, M. D., *Assistant to the Acting Professor of Obstetrics and Diseases of Women and Children in the Department of Medicine and Surgery.* University Block, 30 South State Street.
- BERT B. ROWE, M. D., *Resident Physician and Surgeon in the University Hospital.* University Hospital.
- FREDERICK C. HICKS, A. M., *Assistant in Political Economy.* 90 East Washington Street.
- ALICE HUNT, *Assistant in Drawing.* 27 North University Avenue.
- DEAN C. WORCESTER, A. B., *Assistant in Botany.* 4 South University Avenue.
- FRED P. JORDAN, A. B., *Assistant in General Library in charge of Catalogue.* 48 South Twelfth Street.
- GEORGE J. SCHNEIDER, M. D., *Wardmaster in University Hospital.* University Hospital.
- ESTHER G. WILLOUGHBY, M. D., *Wardmistress in University Hospital.* University Hospital.

- LOUIS P. HALL, D. D. S., *Assistant to the Professor of Clinical and Mechanical Dentistry.* 109 Hill Street.
- CYRENUS G. DARLING, M. D., *Assistant to the Professor of Surgery and Clinical Surgery.* 38 East University Avenue.
- FRANK A. WAPLES, B. S., *Assistant in Physiology.* 30 South Thayer Street.
- VIDA A. LATHAM, B. S., *Assistant in Pathology.* 58 East University Avenue.
- ROY S. COPELAND, M. D., *Resident Physician and Surgeon in the Homœopathic Hospital, and Assistant to the Professor of Ophthalmology, Otology, and Paedology in the Homœopathic Medical College.* Homœopathic Hospital.
- VASHTI D. GARWOOD, M. D., *Assistant to the Professor of Obstetrics and Diseases of Women and Children, and to the Professor of Materia Medica and Therapeutics in the Homœopathic Medical College.* 40 South Twelfth Street.
- FRED MORLEY B. S., *Assistant in Drawing and Surveying.* 51 South Ingalls Street.
- DAVID G. COOLIDGE, M. D., *Assistant to the Professor of Diseases of the Nervous System.* 48 East Huron Street.
- FRANCIS W. BREWER, M. D., *Assistant to the Professor of Hygiene and Physiological Chemistry.* 39 South Twelfth Street.
- ANDERSON H. HOPKINS, *Assistant in General Library.* 9 South State Street.
- LOUIS C. HILL, B. S., *Assistant in Physical Laboratory.* 72 South State Street.
- WILLIAM H. HODGE, M. D., *Assistant to the Professor of Surgery and Clinical Surgery, and to the Professor of the Theory and Practice of Medicine in the Homœopathic Medical College.* Homœopathic Hospital.
- LORENZO BURROWS, M. D., *Assistant to the Professor of Ophthalmic and Aural Surgery, and Clinical Ophthalmology.* Hamilton Block, Corner of Huron and Fourth Streets.
- OLIVER A. LACRONE, M. D., *Assistant to the Professor of the Theory and Practice of Medicine and Clinical Medicine.* 25 Maynard Street.
- JOHN H. WINANS, LL. B., *Assistant to the Tappan Professor, and to the Jay Professor of Law.* 48 Thompson Street.
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UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

The University of Michigan is a part of the public educational system of the State. The governing body of the institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the constitution of the State. In accordance with the law of the State, the University aims to complete and crown the work that is begun in the public schools, by furnishing ample facilities for liberal education in literature, science, and the arts, and for thorough professional study of medicine, pharmacy, law, and dentistry. Through the aid that has been received from the United States and from the State it is enabled to offer its privileges, without charge for tuition, to all persons, of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the institution to all students, wherever their homes. It is in this broad, generous, and hospitable spirit, that the University has been founded, and that it endeavors to do its work.

ORGANIZATION OF THE UNIVERSITY.

The University comprises the Department of Literature, Science, and the Arts, the Department of Medicine and Surgery, the Department of Law, the School of Pharmacy, the Homœopathic Medical College, and the College of Dental Surgery. Each department has its special faculty of instruction. The University Senate is composed of all the faculties, and considers questions of common interest and importance to them all.

In the Department of Literature, Science, and the Arts,

different lines of study lead to the attainment of the degrees of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science, Bachelor of Letters, the corresponding Masters' degrees, the degrees of Doctor of Philosophy, Doctor of Science, and Doctor of Letters, and the degrees of Civil Engineer, Mechanical Engineer, Mining Engineer, and Electrical Engineer. When the same degree is given for different lines of study, this fact is indicated in the diploma. Students that do not wish to become candidates for a degree, may, if they are prepared to enter this department of the University, pursue selected studies for such a time, not less than one semester, as they may choose.

In the professional schools the instruction is given largely by lectures. The several degrees are given as follows: In the Department of Medicine and Surgery, the degree of Doctor of Medicine; in the Department of Law, the degrees of Bachelor of Laws and Master of Laws; in the School of Pharmacy, the degrees of Pharmaceutical Chemist and Master of Pharmacy; in the Homœopathic Medical College, the degree of Doctor of Medicine; in the College of Dental Surgery, the degree of Doctor of Dental Surgery.

Students in any department of the University may enter the classes in any other, upon obtaining permission from the faculties of the respective departments.

THE LIBRARIES.

The libraries of the University are the General Library, the Medical Library, the Law Library, and the Library of the College of Dental Surgery. They contained in the aggregate, September 30, 1889, 70,041 volumes, 14,626 unbound pamphlets, and 514 maps and charts.

The GENERAL LIBRARY, including the special collections known as the Parsons Library, the McMillan Shakespeare Library, the Hagerman Collection of History and Political Science, the German-American Goethe Library, and the Dorsch Library, contains 55,703 volumes, 13,440 unbound pamphlets, and 514 maps and charts.

The Parsons Library was collected by Professor C. H. Rau, of Heidel-

berg University. At his death it was offered for sale, and was bought and presented to the University in 1871 by Hon. Philo Parsons, of Detroit. It contains, with recent additions made by Mr. Parsons, 4,325 volumes and 5,000 pamphlets. It is especially rich in European works on the science of government, statistics, and political economy.

The nucleus of the McMillan Shakespeare Library was the valuable Shakespearian collection of 750 volumes made by Col. E. H. Thompson, of Flint. This was bought and presented to the University in 1882, by Hon. James McMillan, of Detroit, who at the same time provided the means for making additions to it. The collection now consists of 3,200 volumes of text, criticism, and Shakespeariana.

The Hagerman Collection of History and Political Science was purchased with means provided in 1882 by Mr. James J. Hagerman, a graduate of this University, class of 1861. It is practically a collection of great serial publications, of which there may be named, for the purpose of illustration, the Calendar of State Papers of Great Britain, Petitot's *Collection Complète des Mémoires relatifs à l' Histoire de France*, and the *Preussische Jahrbuecher*. It contains at present 2,600 volumes.

The German-American Goethe Library has been founded and will be augmented from funds contributed for the purpose by a large number of persons in Michigan and other States. The donors are chiefly, though not exclusively, Germans. The number of volumes secured thus far is 780.

The Dorsch Library was the private collection of Dr. Edward Dorsch, of Monroe. In accordance with a wish expressed by him a few months before his death, it was, after that event, presented by Mrs. Dorsch to the University. It contains 1,676 volumes and 148 pamphlets. Among the volumes are many of great interest and value, and some that are rare.

The catalogue of the library is the usual card catalogue of authors and subjects.

One hundred and seventy American and European periodicals are taken.

Members of the faculties and other officers of the University may draw books from the library, subject to certain restrictions. To all other persons it is a reference library. The reading room for general use will seat 210 readers. Separate rooms for advanced students are provided where work is pursued with the necessary books at hand.

The MEDICAL LIBRARY, containing 3,903 volumes and 983 unbound pamphlets, is shelved with the General Library, and is consulted under the same regulations. Forty-four medical journals are regularly received.

The LAW LIBRARY occupies the large room on the first floor of the law building. In 1885 it was doubled in extent by the generosity of Mr. Christian H. Buhl, of Detroit, who pre-

sented to the University a large collection of law books. This library now contains 9,953 volumes.

The LIBRARY OF THE COLLEGE OF DENTAL SURGERY is shelved in a room in the dental building. It contains several sets of valuable periodicals and many of the most important treatises on dentistry. The whole number of volumes is 482. Thirteen dental periodicals are taken.

The students' literary and engineering societies in the Department of Literature, Science, and the Arts, have also good libraries.

The Students' Christian Association connected with the University has a well selected library of moral and religious works.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is known as the Detroit Observatory, having been founded through the liberality of citizens of Detroit. Valuable additions and improvements have been made by means of further contributions from the same source, and from the city of Ann Arbor, and also by appropriations made by the Board of Regents. The building consists of a main part, with a movable dome, and two wings. The east wing contains the large meridian circle presented by Mr. Henry N. Walker, of Detroit. It was constructed by Pistor & Martins, of Berlin, and is one of the largest and best of the kind. The same wing contains a sidereal clock, made by Tiede, of Berlin, and the collimators for the meridian circle. The west wing contains the observatory library and the smaller instruments, and connects with the residence of the Director. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late Henry Fitz, of New York.

A small observatory used in the work of instruction has been erected on the observatory grounds, near the main building. It contains an equatorial telescope of six inches aperture, and a transit instrument of three inches aperture, with zenith telescope attachment. A separate building contains computing rooms and

rooms for observers, and a work-shop where necessary repairs and attachments for the instruments can be made.

A set of self-registering meteorological instruments, consisting of Hough's barograph and thermograph, and an anemograph, is a part of the outfit.

THE MUSEUMS.

The University Museums contain collections illustrative of natural history, the industrial arts, archæology, ethnology, the fine arts, history, anatomy, and materia medica. These collections are constantly increasing and are in charge of curators as follows: the museum of fine arts and history, Professor ——; the collections in zoology, archæology, and ethnology, Professor Steere; the mineralogical collection, Professor Pettee; the geological collection, Professor Winchell; the botanical collection, Professor Spalding; the museum of applied chemistry, Professor Prescott; the museum of the department of medicine and surgery, Dr. W. A. Campbell; the museum of the homœopathic medical college, Professor Obetz; the dental museum, Professor Dorrance.

The collections are arranged in such a way as to render them accessible both to students and to visitors. The University affords a secure depository for objects of value and curiosity, and it is therefore hoped that frequent gifts will be made to its several museums.

The museum building contains the collections in mineralogy, geology, zoology, the industrial arts, archæology, and ethnology. The collections of works of art, including historical medallions and coins, are in the art gallery.

The following description will indicate the character of the several collections belonging to the University:

NATURAL HISTORY.

I. THE MINERALOGICAL COLLECTION comprises about 6,000 specimens. It embraces about 2,500 specimens (principally European) purchased of the late Baron LEDERER, and known as the LEDERER COLLECTION; and, besides others, a rich collection of the MINERAL SPECIES OF MICHIGAN, including all varieties of copper ore and associated minerals from the different localities of the Lake Superior mining district.

II. The GEOLOGICAL COLLECTION consists of:

1. The large and complete series of lithological and palæontological specimens brought together by the State geological surveys, of which over a hundred fossil species have already become the types of original descriptions.

2. The WHITE COLLECTION, consisting of 1,018 distinct entries, 6,000 specimens.

3. The ROMINGER COLLECTION, embracing about 2,500 entries, 6,000 specimens, mostly from the mesozoic formations of central Europe. This collection embraces about 500 specimens of mesozoic ammonites.

4. SMITHSONIAN DEPOSITS, consisting, for the present, of a collection of specimens of foreign and domestic building stones, and twenty-three specimens of fossils from the Upper Missouri.

5. MISCELLANEOUS DONATIONS, COLLECTIONS, AND PURCHASES, including a series illustrative of the metalliferous regions of the Upper Peninsula, collected by Professor Winchell, and an interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, presented by the late General Custer, U. S. A.

6. The ROMINGER DEPOSIT, which has more than doubled the value of the geological illustrations available for study and investigation. It embraces (1) the types of all Dr. Rominger's original descriptions of palæozoic corals as contained in the Geological Report of Michigan, volume iii.—not alone the specimens figured, but numerous specimens of each species, which are not duplicates, but illustrations of different characters and varieties; (2) an enormous collection of *Stromatoporoids*—probably the largest and finest in the world; (3) a similar collection of *Bryozoa*; (4) palæozoic fossils belonging to all the other classes; (5) European fossils of all classes and ages in large number—the sponges forming, with the American species, a collection of extraordinary interest. All these specimens exist in a state of beautiful and very unusual perfection. It is impossible at present to form numerical estimates on the magnitude of the collection, but a special statement will be made out as early as practicable.

The entire geological cabinet is estimated to contain, aside from the Rominger deposit, about 14,000 distinct entries, 41,000 specimens.

III. The ZOOLOGICAL COLLECTIONS are very large, comprising about 110,000 specimens under about 23,250 entries. There is a full series illustrative of the fauna of Michigan and other northern and western States. The animals of the Pacific coast are well represented in the collection made by Lieutenant Trowbridge, and large additions from foreign countries have been made through the medium of the Smithsonian Institution. The series of valuable specimens collected in the Philippine Islands, by Professor Steere, in the years 1887 and 1888, now forms a part of the collection.

The BEAL-STEERE ZOOLOGICAL COLLECTION, made by Professor Steere in the years 1870-76, comprises about 25,000 insects, 1,500 shells, 8,000

birds, and numerous representatives of other groups; total, about 10,000 entries, 60,000 specimens.

IV. The BOTANICAL COLLECTION contains, in addition to Michigan plants collected by the public surveys, several valuable herbaria and sets of plants that have been presented to the University from time to time. Among these, some of the most important are the HOUGHTON HERBARIUM, the SAGER HERBARIUM, the AMES HERBARIUM, the HARRINGTON COLLECTION, the BEAL-STEERE BOTANICAL COLLECTION, the ADAMS-JEWETT COLLECTION, and the GARRIGUES COLLECTION, all of which have been described in Calendars of previous years.

Among the more recent acquisitions are a set of native woods of the United States, collected and presented to the University by Professor C. S. Sargent, Director of the Arnold Arboretum of Harvard University; a set of 1,700 species of North American fungi, presented by Mr. Joseph B. Whittier, of East Saginaw; and a set of specimens illustrating the flora of the Lake Superior region, presented by Mr. Frank A. Wood. Sections of representative specimens of the most important coniferous trees of the eastern United States have lately been presented by Dr. Charles Mohr, of Mobile, Ala., Hon. John E. Hobbs, of North Berwick, Me., Mr. N. B. Pierce, of Ludington, and Mr. George A. Loud, of Oscoda.

The whole botanical cabinet contains about 70,000 specimens, representing 10,000 species, under 20,000 entries.

The collections in natural history are estimated to contain about 255,000 specimens, under 60,000 entries.

INDUSTRIAL COLLECTIONS.

The collections illustrative of the materials, processes, and products of the industrial arts and of agriculture have recently received a large and valuable addition. In 1885 the Chinese Government presented to the University the exhibit which it sent to the New Orleans Exposition. The whole collection, numbering several thousand specimens, is now on exhibition in a room set apart for its reception in the museum building. It illustrates with special fulness the varieties of Chinese cotton, the Chinese processes of manufacturing cotton, and the finished products of cotton and of silk. There are many articles showing the skill of the Chinese in working in wood, in ivory, and in porcelain, in embroidery, and in painting on glass and on silk.

The nucleus of an industrial museum has long existed in the botanical and zoological cabinets, the cabinet of economic geology, the museum of applied chemistry, a collection of the seeds of cereals and other field and garden crops, and an interesting collection of textile fibres and various substitutes for cotton. The museum of applied chemistry represents the technology of industrial chemistry and of pharmacy. The chemical manufactures of the United States are chosen for illustration, with an

especial prominence to production in Michigan. The University is desirous of enlarging these collections.

ARCHÆOLOGY AND ETHNOLOGY.

This department contains many articles of domestic and warlike use among the North American Indians and the Islanders of the South Pacific, numerous remains of the ancient Peruvians, and many specimens of clothing, art, etc., of the Amazonian Indians, modern Peruvians, Formosans, and natives of the East Indies and Alaska. The Chinese exhibit above referred to contains a large number of articles which belong to the ethnological collection.

THE FINE ARTS AND HISTORY.

The works of art belonging to the University are on exhibition in the galleries provided for them in the library building, and a printed catalogue has been prepared by Professor Frieze. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of the most valuable ancient statues and busts, such as the Apollo Belvedere, the Laocoon, the Sophocles, etc.; a gallery of more than two hundred reductions and models in terra-cotta and other materials; the statues of Nydia and of Ruth Gleaning, by Randolph Rogers; copies of modern statues, busts, and reliefs; a gallery of engravings and photographic views, illustrating especially the architectural and sculptural remains of ancient Italy and Greece; a small collection of engraved copies of the great masterpieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, and the GOVERNOR BAGLEY COLLECTION—the former illustrative of ancient, mediæval, and modern European history, the latter designed to embrace all the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. A. E. Richards.

The late HENRY C. LEWIS, of Coldwater, Michigan, by his will bequeathed to the University his valuable collection of works of art, comprising about six hundred and fifty paintings and forty pieces of statuary. The collection remains for the present at Coldwater, but will ultimately be transferred to the University gallery.

The ROGERS GALLERY, comprising the entire collection of the original casts of the works of Randolph Rogers, more than a hundred in number, has been given by that distinguished sculptor to the State of Michigan for the University museum. Nearly the whole of this collection has already been received and now forms a large and interesting part of the art gallery.

ANATOMY AND MATERIA MEDICA.

This museum is used more especially in connection with the in-

struction given in medicine, and a fuller description of it will be found in the chapter on the Department of Medicine and Surgery.

THE LABORATORIES.

In the several laboratories of the University opportunities are provided for practical instruction in physics, chemistry, geology, zoology, botany, engineering, histology, physiology, hygiene, pathology, and dentistry.

PHYSICAL LABORATORY.

The new laboratory contains about 11,000 square feet of floor space devoted exclusively to physics. The basement story has a German rock asphaltum floor throughout and is provided with heavy stone-capped piers in every work room. This entire floor is devoted, with slight exception, to experimental work in electricity and magnetism. The engine and dynamo room, 36 by 38 feet, is supplied with a 25 H-P high-speed engine, a constant-potential dynamo of 5,000 watts capacity, a ten arc-light Brush dynamo, with full complement of lamps, a 5 H-P constant-potential motor, and a cast-iron Brackett cradle dynamometer, capable of carrying a 100-light incandescent machine. A large room adjacent is supplied with heavy resistances, electro-dynamometers, ammeters and voltmeters for tests of dynamos and motors. The photometric room, with black walls and lighted only artificially, is also adjacent to the dynamo room.

A battery room, well ventilated and lighted, and supplied with water, contains a storage battery of thirty-one cells and primary batteries for electrical measurements. The storage battery is also used to furnish current for the fifty incandescent lamps with which the laboratory is lighted. Five smaller work rooms are fitted with the usual appliances for electrical measurements.

A commodious lecture room, 36 by 38 feet, on the first floor, is seated for 120 students. The lecture table is provided with gas, water, and electricity; and the windows are easily darkened by means of black screens which run down into pockets when not in use.

The apparatus room is situated between the lecture room and the general laboratory for elementary work in mechanics, sound, light, and heat. Heavy tables in the centre of this room and slate slabs attached to the walls furnish convenient and stable supports for the apparatus. Two rooms, leading from the general laboratory, are devoted to apparatus requiring the use of mercury, and to the balances and dividing engine. The two remaining rooms constitute the private apartments of the Professor of Physics.

The laboratory is supplied with the most modern apparatus from the best American and European makers. In sound, it includes tuning forks

and resonators from Koenig of Paris; in light, a spectrometer with 12-inch divided circle, and an ophthamo-spectroscope from the Geneva Society; in electricity, galvanometers from Edelmann, Hartmann & Braun, and Elliott Brothers, resistance coils, ranging from the standard ohm up to 250,000 units, from Elliott Brothers and Queen & Co., besides condensers, reading telescopes and electro-dynamometers. The recent additions include Sir Wm. Thomson's centi-ampère balance, a potential and a current galvanometer, and a static voltmeter, all made by White of Glasgow.

The work in the laboratory is entirely quantitative in character, but provision has been made for illustrating the general principles of physics in the lecture courses.

CHEMICAL LABORATORY.

In this laboratory, facilities are provided for systematic instruction in laboratory methods of chemical study, including general chemistry, analytical and applied chemistry, organic chemistry, physiological chemistry, pharmacy, metallurgy, and assaying, and favorable opportunities are offered for original research.

The laboratory building is so arranged as to provide room for twelve distinct branches of chemical work within the college year, in addition to the lecture rooms, balance rooms, instructors' rooms, and store rooms. Two hundred and sixty-two students can be provided with tables for work at the same time. The addition of a new wing, now in process of erection, will add largely to the present accommodations.

The Laboratory is open to all students of the University, and is regularly used by all departments except the Department of Law. It is also open to any person who wishes to pursue special studies therein, provided he complies with the conditions for admission to that department of the University to which the desired special studies properly belong.

In all these courses of instruction there are recitations and lectures in the class-rooms, giving direction daily to the student at his table, and demanding constant study of the work undertaken. This method of teaching makes it indispensable that the student begin with a class. The Laboratory is open to students each week day of the college year.

GEOLOGICAL AND ZOOLOGICAL LABORATORIES.

Opportunity for practical work in geology and zoology, is provided in rooms set apart for this use in the museum building, and in the north wing of the main building. The rooms are furnished with microscopes, photographic instruments, cutting and polishing lathes, and other apparatus for the preparation of specimens. Special encouragement and assistance are given to students wishing to carry on original investigations.

BOTANICAL LABORATORY.

In this laboratory instruction is given in the practical study of the structure and physiology of plants; and opportunity is offered to advanced students for the study of vegetable pathology and other special subjects.

The laboratory is provided with thirty-five compound microscopes, microtomes, micro-chemical reagents, and a fair outfit for physiological experiments.

Students in the elementary courses have constant personal assistance and direction from the instructors. The advanced courses require more independent work, and, as far as possible, every facility will be provided those who have shown themselves capable of carrying on the work of research.

MORPHOLOGICAL LABORATORY.

This laboratory is equipped for the study of the structure and development of vertebrate and invertebrate animals. It is provided with the necessary microscopes, microtomes, warming ovens, incubators, aquaria, and other appliances. There is a full supply of the reagents and glassware used in morphological work. There is also an increasing collection of alcoholic specimens (many of them from the Naples zoological station), of glass models, and of charts illustrating the forms studied. A reference library is shelved in the room.

ENGINEERING LABORATORY.

The Engineering Laboratory, enlarged in 1887 by the addition of two wings, which nearly doubled its former capacity, contains about 20,000 square feet of floor space.

The mechanical laboratory, 40 by 80 feet, is devoted to experimental work in connection with the testing of engines, boilers, pumps, injectors, belting, toothed and friction gearing, and lubricants; and to such original work as can be undertaken with advantage. Original work bearing on subjects for theses is especially encouraged. Machines for testing building material will also be provided. The work also extends to the testing of engines, boilers, and water-wheels of neighboring mills and electric-light plants. The Knowles and the Gordon compound duplex pumping engines at the city water works have been fitted up by the company with especial reference to the convenience of engineering students in making tests.

The iron room, or machine shop, and the wood room and pattern shop, each 40 by 80 feet, contain the tools and apparatus usually found in first-class establishments. The wood room contains benches for twenty students. The pattern loft, 40 by 80 feet, contains a fine collection of patterns made by students.

The forge shop, 30 by 40 feet, is fitted up with twelve forges, built

by students in the laboratory shops. The blast is supplied by a No. 4 Sturtevant pressure blower, and the smoke is cleared away by a No. 31 exhaust fan.

The foundry, 30 by 40 feet, contains an eighteen-inch cupola and brass furnaces, and is supplied with blast by a No. 3 Sturtevant pressure blower.

The central wing is 32 by 54 feet. The first floor contains a large, well-ventilated wash room with closets and other conveniences; an engine room with a 50 H-P Reynolds-Corliss engine; and superintendent's office. The second floor contains a large, well-lighted drawing room, and a blue-print room. The basement and attic are devoted to storage purposes.

In the tower, at an elevation of seventy-five feet, there is a water tank, of one hundred barrels capacity, that can be utilized for experimental work in hydraulics.

New machinery is added to each shop from time to time so that engineering students and others desiring instruction and practice in the use of tools for working in wood and metal may be properly accommodated, and at the same time have opportunity to become familiar with the more common materials and forms of construction used in engineering structures, buildings, and machinery. In all shop work an effort is made to follow the practice of the best shops. Several of the machines in use have been designed and built by the students themselves.

Mr. John M. Smoots, Mr. Robert Winslow, Mr. Horace Purfield, and Mr. Mortimer Vandervoort are employed as foremen in the machine shop, the foundry, the wood room, and the forge shop, and they also assist in the work of instruction.

HISTOLOGICAL LABORATORY.

This laboratory is well supplied with microscopes, microscopical accessories, automatic and sliding microtomes, and other apparatus required in histological work. The course of instruction in elementary histology is arranged for two classes, one for each semester. Each class meets for fifteen afternoons. The fundamental tissues and the various organs of the animal body are studied, and the students are instructed in the use of the microscope, and the methods of preparing and mounting specimens. Most of the preparatory work, such as staining and cutting sections, is done for the student, so that his time is devoted to mounting and studying the specimens given to him. The course is designed especially as a preparation for the future study of physiology and pathology. The laboratory offers facilities also for more advanced work to those who desire to become acquainted with histological methods, such as the preservation of tissues for study, the methods of section cutting, of staining, of microscopical injection, etc.

PHYSIOLOGICAL LABORATORY.

The apartments which have recently been provided for this laboratory offer unsurpassed facilities for practical work in physiology, whether of class instruction or original investigation. A large and well-lighted room is appropriated chiefly to the use of undergraduate students who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of the special senses, muscular contraction, nerve, reflex action, circulation, and respiration. A smaller room is devoted to advanced work and original investigation. Conveniently situated are an apparatus room, a dark chamber for optical experiments, an incubation closet, and a large work shop containing machinists' and carpenters' appliances. The instrumental equipment of this laboratory is unusually complete.

HYGIENIC LABORATORY.

The hygienic laboratory contains a large room for general work in hygiene, a lecture room, a microscopical room, special rooms fitted especially for gas analysis, water analysis, and bacteriological work, a disinfecting chamber, a cold chamber, and three private rooms for original research. It is furnished with all necessary chemical, optical, and bacteriological apparatus. A full set of Koch's bacteriological apparatus is in use. The chief purpose of this laboratory is to furnish proper facilities to those who are competent to carry on original investigations in hygiene, and it is open to any such person, who desires to pursue special lines of investigation, provided he complies with the requirements for admission to the literary or the medical departments of the University.

PATHOLOGICAL AND BACTERIOLOGICAL LABORATORIES.

The two laboratories formerly used for histology have now been adapted for pathological work. The north laboratory is arranged for practical work, such as staining and mounting sections of diseased tissue and staining and examining micro-organisms, and for the various operations required in the microscopical examination of the processes and causation of disease. The south laboratory is devoted to bacteriological research and contains all the apparatus necessary for that purpose, such as Koch's bacteriological apparatus, as well as those of simpler form.

These laboratories are amply supplied with all material in the form of hardened organs and tissues, pure cultivations of micro-organisms, etc., which can possibly be required for any investigation in strictly pathological research.

There are also animal rooms where the effects of inoculation experiments can be observed, and where the animals can be isolated and kept under special conditions when required.

There is also a large room where material received from the hospital and other sources is prepared for class use, and where post-mortem examination of animals is made.

Advanced students and others, when qualified to undertake the work, are invited to pursue special investigations into the causation of disease, for which ample facilities will be given.

DENTAL LABORATORY.

This laboratory has been fitted up especially for students in the College of Dental Surgery. It contains eight charcoal and coke furnaces; also, sand-tables, rolling-mills, and other appliances for the various manipulations of prosthetic dentistry, such as the construction of artificial dentures in gold, continuous gum, silver, aluminium, and other bases; appliances for the regulation of teeth, the mechanical treatment of oral deformities, and the construction of instruments. The laboratory has accommodations for fifty students at a time.

THE HOSPITALS.

During the past few years the facilities for clinical instruction in the two medical schools connected with the University have been largely increased, and they are to be still further increased by the erection of a new hospital building, for which the state legislature and the city of Ann Arbor have together appropriated the sum of \$75,000. The University Hospital is under the direction of the Faculty of the Department of Medicine and Surgery; the Homœopathic Hospital is connected with the Homœopathic Medical College. Further information in regard to the hospitals is given in connection with the descriptions of the medical schools.

FEES AND EXPENSES.

MATRICULATION FEE.—Every student before entering any department of the University is required to pay a matriculation fee. This fee, which, for citizens of Michigan, is ten dollars, and, for those who come from any other State or country, twenty-five dollars, is paid but once, and entitles the student to the privileges of permanent membership in the University.

ANNUAL FEE.—In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses. This fee is paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fee as undergraduates. The annual fee in the several departments of the University is as follows:

Department of Literature, Science, and the Arts: for Michigan students, twenty dollars; for all others, thirty dollars.

Department of Medicine and Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Department of Law: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

School of Pharmacy: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Homœopathic Medical College: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

College of Dental Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

The matriculation fee and the annual fee must be paid at the beginning of the college year. A by-law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees that are due.

LABORATORY EXPENSES.—Students who pursue laboratory courses of study are required to pay for the materials and apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from one dollar to twenty dollars. The laboratory expenses of students will vary with their prudence and economy. Experience has shown that in the chemical laboratory the average expense for all courses is about one dollar and twenty cents a week.

DIPLOMA FEE.—The fee for the diploma given on graduation is ten dollars, and the by-laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for diploma.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are

also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office. The annual expenses of students, including clothing and incidentals, are, on the average, about three hundred and seventy dollars. The University does not undertake to furnish manual labor to students; yet a few find opportunities in the city for remunerative labor.

RELATION OF STUDENTS TO THE CITY GOVERNMENT.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

AIDS TO MORAL AND RELIGIOUS CULTURE.

Religious exercises are held regularly in the University Chapel, at which attendance is voluntary.

The Students' Christian Association, which has a large membership, holds stated meetings, either for religious or social improvement. Through the enterprising efforts of the Association and the benevolence of those interested in its aims, a spacious and beautiful building, called Newberry Hall, has been erected for its use adjacent to the University Campus.

The churches of the city of Ann Arbor are cordially thrown open to the students, whose interests are largely consulted by the pastors in their pulpit instruction and in their plans of work. There are churches of the following communions in the city: Baptist, Congregationalist, the Disciples, German Lutheran, German Methodist, Methodist Episcopal, Presbyterian, Protestant Episcopal, Roman Catholic, and Unitarian.

In several of the churches, guilds or other societies, consisting chiefly of students, have been organized, both for religious

and moral culture, and for social entertainment. The Hobart Guild, connected with St. Andrews' Church (Protestant Episcopal), has already erected a commodious building, called Hobart Hall, planned and equipped for all the objects of the Guild; and one of the several lectureships contemplated in its plans has been endowed under the title of the Baldwin Lectures for the Establishment and Defence of Christian Truth. Three of the annual courses of Baldwin Lectures have already been given. The Presbyterian church, with similar aims, has established the Tappan Presbyterian Hall Association, with an annual course of lectures upon church history and church work. The Methodist Episcopal church has also organized the Wesleyan Guild, with its course of lectures, and has made the beginning of a permanent fund. The Unity Club and the Channing Guild are societies formed by the Unitarian church with similar purposes.

DEPARTMENT

OF

Literature, Science, and the Arts.

The Department of Literature, Science, and the Arts owes its name to a provision in the legislative act by which the University was organized in the year 1837. In general terms, this department represents the collegiate and technological sides of university work, as distinguished from the work of the professional schools in medicine, law, pharmacy, and dentistry. It also provides instruction in studies pertaining to political science, as heretofore, though, with the flexible elective system now in force, it has been found unnecessary to retain an independent School of Political Science, under the form of organization described in calendars of previous years.

The courses of instruction are arranged to meet the wants not only of such as are fitted to take up a systematic course of study in the classics, or in science, but also for those whose preparatory studies have not included any ancient or foreign language. Special students, who wish to pursue miscellaneous studies, are admitted on conditions stated on page 40.

The academic year extends from the first day of October to the Thursday following the last Wednesday in June.

In what follows, the work of this department is described under these heads: Requirements for Admission, Courses of Instruction, Requirements for Graduation, Further Description of Courses in Technological and Professional Studies, Rules and Regulations of the Department, Fees and Expenses, and the Elisha Jones Classical Fellowship.

REQUIREMENTS FOR ADMISSION.

Candidates for admission must be at least sixteen years of age, and must present satisfactory evidence of good moral character. They must be provided with credentials from their last instructor, or from the last institution with which they have been connected. These credentials must be presented to the President at his office, before the candidate can enter upon the examination.

Admission of Candidates for a Degree.

[For Admission to Advanced Standing, see page 89.]

[For Admission of Students not Candidates for a Degree, see page 40.]

Students who desire to become candidates for a degree must, unless admitted on diploma (see page 41), pass examinations in the subjects described below.

FOR THE DEGREE OF BACHELOR OF ARTS.

Candidates will be examined in the following subjects.

1. ENGLISH LANGUAGE, COMPOSITION, AND RHETORIC.—The examination will be as follows:

a. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

b. An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing. The subjects for 1890 will be taken from the following works, with the substance of which,—the plots, incidents, characters, etc.,—it is expected that the student will by careful reading thoroughly familiarize himself:—Shakespeare's *As You Like It*; Scott's *Guy Mannering*; Kingsley's *Hypatia*. The subjects for 1891 will be taken from Shakespeare's *Macbeth*; Goldsmith's *Vicar of Wakefield*; Scott's *Old Mortality*; Longfellow's *Hyperion*. Equivalents of these will, of course, be accepted.

For securing the proper preparation, the following course is recommended: 1. A few lessons and constant practice in the proper use of the *Unabridged Dictionaries*. 2. A review of the elements of *English Grammar* during the last years of the preparatory course. 3. Daily recitations for at least one term in some such work as D. J. Hill's *Elements of Rhetoric and Composition*, or A. S. Hill's *Principles of Rhetoric*. 4. A careful reading of one of Shakespeare's plays, in an annotated edition, as Hud-

son's, Rolfe's, Meiklejohn's, or one of the Clarendon Press series. 5. Weekly exercises in original composition, for at least two years.

A large proportion of those who seek admission to the University are found to be very deficient in their preparation in English. It is on every account desirable that such deficiency be removed as far and as fast as possible, and that the requirements in English for admission to the University be enlarged.

2. HISTORY.—In Grecian History, the first three books of Smith's History of Greece, exclusive of the chapters on Literature and Art; Leighton's History of Rome, fifty-four chapters, to the accession of Augustus, or an equivalent; Higginson's or Johnston's History of the United States, as far as the close of the Revolutionary War, or an equivalent.

3. MATHEMATICS.—*Algebra*.—Fundamental Rules, Fractions, Simple Equations, Involution and Evolution, the Calculus of Radicals, and Quadratic Equations; i. e., Olney's Complete School Algebra, omitting pages 281-334 and pages 381-390, or an equivalent in other authors.

Geometry.—Plane, Solid, and Spherical Geometry, as given in Olney's New Elementary Geometry, or an equivalent in other authors.

N. B. It is very desirable that High Schools whose graduates are received on diploma arrange their courses so as to include a portion of both Algebra and Geometry in their last preparatory year; and it is equally important that other students should do the same if they expect to succeed in the study of mathematics in the University.

4. NATURAL PHILOSOPHY.—An amount represented by the study, with experimental illustrations, of such a text-book as Avery's Natural Philosophy, or Gage's Elements of Physics.

5. BOTANY.—The elements of Vegetable Anatomy and Physiology, as given in Gray's Lessons, and an analysis and written descriptions of fifty species of phanerogams.

6. LATIN.—*Grammar*.—A thorough preparation in the elements of Etymology, Syntax, and Prosody.

Prose Composition.—Candidates will be asked to translate into Latin a passage of connected English narrative, based upon some portion of the Caesar or Cicero read. As a text-book, Jones's, Collar's or Daniell's is recommended.

Reading.—Four books of Caesar's Gallic War; six select orations of Cicero; and nine books of Vergil's Æneid. For books 7-9 of the Æneid, all of the Eclogues, or 1,200 lines of Ovid, may be substituted.

Four years, if possible, should be given to the preparatory work in Latin outlined above. Special care should be taken with the training in Latin Prose Composition. It is hoped that many schools will continue, as heretofore, to prepare students in the whole of the Æneid, or an equivalent. Students entering the University thus prepared will receive a certain amount of credit toward graduation.

The Roman method of pronouncing Latin is used at the University.

7. GREEK.—*Grammar*.—Hadley's, or Goodwin's. The etymology must be thoroughly mastered.

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents and to the general principles of syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis*.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's or White's First Lessons in Greek will be found valuable.

Two full years of daily recitation ought to be given to preparation in Greek.

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Candidates will be examined in all the subjects required for the admission of candidates for the degree of Bachelor of Arts (see page 34), excepting what is required in Greek and in Grecian History; and also in French, or in German, the same as for the degree of Bachelor of Science (see below).

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Two groups of requirements for admission of candidates for the degree of Bachelor of Science are given below:—the first for students who intend to complete the requirements for graduation in General Science, in Chemistry, or in Biology, as given on subsequent pages; the second for students who intend to pursue courses in Civil, Mechanical, Mining, or Electrical Engineering.

I. FOR THE COURSE IN GENERAL SCIENCE, IN CHEMISTRY, OR IN BIOLOGY.

Candidates will be examined in the following subjects:

1. ENGLISH LANGUAGE, AND MATHEMATICS.—In both, the same as for the degree of Bachelor of Arts (see pages 34 and 35).

2. HISTORY.—*General History*.—Freeman's General Sketch of European History, Myers's General History, or Swinton's Outlines.

United States History.—Higginson, or Johnston, as far as the close of the Revolutionary War.

3. FRENCH, GERMAN, AND LATIN.—Candidates may offer either French and German; French and Latin; or German and Latin;—two of these three languages being required. The requirements in each are as follows:

French.—The whole subject of French Grammar. The candidate will be expected to be thoroughly familiar with the formation and use of French verbs, to read at sight easy French, and to translate correctly into

French simple English sentences. Two years ought to be given to this study, the first year being spent on the grammar, and the second devoted to reading good modern French, accompanied by grammatical analysis and exercises in writing. Hennequin's French text-books are especially recommended; preparation in Fasquelle or Otto will be accepted.

German.—The whole subject of German Grammar. The candidate will be expected to read easy German at sight, and to translate simple sentences from English into German. To this end he should have devoted two years to the study; one year to the grammar, reader, and the writing of exercises, and a second year to the reading of complete works of literary art. As a text for the second year's study, works in dramatic form, and especially the classical plays of Schiller, are recommended.

Latin.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book; four books of Caesar's Gallic War, and one of the orations of Cicero. It is expected that about two years will be given to preparation in Latin.

4. NATURAL PHILOSOPHY, AND BOTANY.—In both, the same as for the degree of Bachelor of Arts (see page 35).

5. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—The candidate may offer any one of these subjects. The requirements, intended to cover a half year's work in each subject, are as follows:

Chemistry.—Nichols's Abridgment of Eliot and Storer's Manual, Shepard's Chemistry, or an equivalent.

Geology.—Candidates who offer themselves in Geology must be well acquainted with the elements of lithological, dynamical, and historical geology, as presented in Winchell's Geological Studies, or some other good work. Especial stress is laid on familiarity with a dozen or two of the more common species of rocks and their included minerals, on the tables of classification of geological formations, on the general nature of the succession of organic forms, and on the doctrines of sedimentation, erosion, upheaval, and subsidence.

This preparation is intended to furnish some such fitness for more advanced study as is demanded in the departments of mathematics and languages. It is the equivalent of Courses 1 and 2 in the University. Experience proves, however, that these points are not well understood. Most students presenting themselves for examination hitherto, have failed in thoroughness, readiness, and freshness of knowledge. Candidates are expressly notified that a few weeks' indifferent instruction, two, or three, or four years previously, without use of specimens, and without any field observation, can never supply that clear and ready acquaintance with the subject which is requisite for more advanced work in the University. Still less can a hasty reading up for examination, in the lack of previous thorough study, answer the requirement.

It is understood that Geology is not usually taught in the preparatory schools, especially of Michigan, in such a way as to secure the requisite preparation. Candidates, therefore, who apply without due preparation, can enter on condition, and supply the deficiency by taking Course 1 or 2. But Geology, when offered as one of

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the elective preparatories, cannot also earn advance credit for the candidate. Nor, after having earned advance credit, can it be employed to supply a deficiency in entrance preparation.

Candidates sustaining the required preparatory examination in Geology will be fitted to take Course 3 in the first semester, or Courses 5 and 6 in the second semester.

Zoology.—Packard's *Zoology*, or Nicholson's *Manual of Zoology*.

Physiology.—Martin's *The Human Body*.

Astronomy.—Newcomb and Holden's *Astronomy*, school edition, or an equivalent. A knowledge of the principal constellations will be required.

II. FOR THE COURSES IN ENGINEERING.

Candidates for a degree in any of the courses in engineering will be examined in the following subjects:

1. **ENGLISH LANGUAGE**.—The same as for the degree of Bachelor of Arts (see page 34).

2. **MATHEMATICS**.—*Algebra and Geometry*.—The same as for the degree of Bachelor of Arts (see page 35).

Trigonometry.—Plane Trigonometry as given in Olney's *Elements of Trigonometry*. A candidate who has had no opportunity for preparation in Trigonometry may be admitted, if satisfactory examinations are passed in the other subjects, but he will be required to make up the deficiency by extra work in the University classes in that subject.

3. **HISTORY**.—The same as for the Course in General Science (see page 36).

4. **NATURAL PHILOSOPHY**.—The same as for the degree of Bachelor of Arts (see page 35).

5. **ENGLISH LITERATURE**.—The same as for the degree of Bachelor of Letters (see below).

6. **CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY**.—In any two of these subjects (see page 37).

FOR THE DEGREE OF BACHELOR OF LETTERS.

Candidates will be examined in the following subjects:

1. **ENGLISH LANGUAGE**.—The same as for the degree of Bachelor of Arts (see page 34). Inasmuch as no foreign language is required in preparation for this Course, it will be necessary, in order to secure a corresponding grade of attainments, to give more time to the study of the English language than is required in preparation for the other Courses. It is expected that the preparatory schools will devote at least two years of daily recitation to word-analysis, sentence-analysis, composition, and the elements of Rhetoric.

2. **ENGLISH LITERATURE.**—Daily recitations for at last one year will be requisite. Stopford A. Brooke's Primer, or any one of the Manuals, may be used for an outline of the subject. As much time as practicable should be given to the careful reading and study of representative authors in each period. Candidates who have devoted special time to the subject, may apply for advanced standing in English Literature.

3. **MATHEMATICS.**—The same as for the degree of Bachelor of Arts (see page 35).

4. **NATURAL PHILOSOPHY, AND BOTANY.**—In both, the same as for the degree of Bachelor of Arts (see page 35).

5. **CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.**—In any three of these, the same as for the degree of Bachelor of Science (see page 37).

6. **HISTORY.**—*General History.*—The same as for the degree of Bachelor of Science (see page 36). *United States History.*—Johnston. *English History.*—Ransome.

7. **CIVIL GOVERNMENT.**—Martin's.

FRENCH, GERMAN, AND LATIN.—In place of the *English History* and the three optional sciences specified above, the candidate for admission may present *French*, or *German*, or *Latin*, in amount equal to that exacted of candidates for the degree of Bachelor of Science (see page 36). This means about two years' study in some one of these three languages.

With respect to the option here allowed, it may be observed that, inasmuch as a large part of the work required in the University for the degree of Bachelor of Letters consists of French and German, students who intend to take this degree will find it advantageous to begin at least one of these languages in their preparatory course.

Students will be examined on subjects rather than on specified text-books. Candidates who have not pursued the exact course marked out above will be allowed to present other subjects as equivalents, provided they have the preparation necessary to enter upon the studies required for the degree of Bachelor of Letters, as those studies are taught in the University.

Admission to Advanced Standing.

1. Candidates for advanced standing who do not come from some other university or college will be examined in the studies prescribed for admission, and also in such undergraduate studies as they may ask to be credited with in advance.

2. Students who have completed at least one year's college work in an approved college, and who bring explicit and official certificates describing their courses of study and scholarship, and testifying to their good character, will be admitted without examination, except such as may be necessary in order to deter-

mine what credit they are to receive for work done in the college from which they have come and what courses of study they may profitably pursue here. Students coming from colleges whose requirements for admission are substantially equivalent to those of this Department of the University may thus expect to be able to go on with their work without loss of standing.

3. All students who wish to obtain advance credit for work completed prior to admission to this Department, should make application to the President at the time of matriculation, or as soon thereafter as practicable, and should secure such credits within one year from the date of matriculation. Blank forms for this purpose are provided by the Registrar. After a student's credit has once been adjusted on this account, it cannot be reopened without special vote of the faculty.

Admission of Students not Candidates for a Degree.

Students who desire to pursue studies in this Department, and do not desire to become candidates for a degree, will be admitted on the following conditions:

1. All persons under twenty-one years of age must pass the entrance examinations required of candidates for some degree, as described on previous pages.

2. Persons over twenty-one years of age must show that they have a good knowledge of English and are otherwise prepared to pursue profitably the studies they may desire to take up.

3. Should a student who enters under the preceding provision (2), subsequently become a candidate for graduation, he must pass all the examinations for admission, required of such a candidate, at least one year previous to the time when he proposes to graduate; and in case he wishes to obtain credit for any work completed prior to his admission to this Department, he must make previous application to the President and secure his credit at the time of passing his admission examinations.

Times of Examinations.

An examination for admission to the Department of Literature, Science, and the Arts, will take place on Saturday and

Monday, June 21 and 23, 1890; and another beginning on Thursday, September 25, and continuing through the Friday, Saturday, Monday, and Tuesday following. The examinations will begin at 9 o'clock a. m. of each day. Candidates may take their examination at either of these times, or may take a part in June, and a part in September. In either case it is particularly desired that they present themselves on the first day of the examination.

Examinations for admission will also be held at Chicago, and possibly at some other western cities, on Tuesday and Wednesday, June 24 and 25, 1890. The place and the hours will be announced in the newspapers of those cities.

Admission on Diploma.

The privilege of sending pupils for admission on diploma, formerly limited to approved schools in Michigan, is now extended to include schools in other States.

On request of the school board in charge of any school, the Faculty will designate a committee to visit the school and report upon its condition. Usually the committee will consist of members of the Faculty; but whenever, owing to the great distance of a school from Ann Arbor, or for any other reason, this is impracticable, other persons may be designated to perform, under the direction of the Faculty, the work of inspection.

If the Faculty shall be satisfied from the report of their committee that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission of candidates for any one or more of our degrees, then the graduates from *the approved preparatory course or courses* will be admitted to the University without further examination, and permitted to enter upon such undergraduate work as the preparatory studies contemplated. They must present to the President, within a year and three months after their graduation, the diplomas of their school board, certifying that they have sustained their examinations in all the studies prescribed for admission as candidates for some one of our degrees. They

will also be required to appear at once in their places; otherwise they can be admitted only upon examination.

The schools which shall be approved shall be entitled to send their graduates on diploma for a period of three years (inclusive of the year of visitation) without further inspection, provided that the Faculty are satisfied that within this period no important changes affecting the course of study and the efficiency of the instruction make another inspection necessary. Otherwise, the Faculty reserve the right to require another inspection if the relation between the school and the University is to be maintained. Should the authorities of any school at any time within this period desire that a committee of inspection visit their school, the Faculty will always grant such a request if it is practicable.

It is expected that the superintendent of each approved school shall annually, at a date not later in the year than March first, send to the President a catalogue of the school if one is printed. If no catalogue is published, he will be expected to send a statement, giving the names of the teachers, the number of pupils, and a description of the courses of study.

A circular giving fuller details on this subject can be obtained on application to the President.

The following list comprises the schools approved as qualified to prepare students for admission on diploma in the year 1889. Except where otherwise indicated, the places named are in Michigan, and the school approved is the public high school of the locality.

1. For courses leading to all degrees, viz., A. B., PH. B., B. S., and B. L.: Allen Academy, Chicago, Ill.; Ann Arbor; Battle Creek; Bay City; Benton Harbor Normal and Collegiate Institute; Coldwater; Decatur, Ill.; Detroit; East Saginaw; Flint; Grand Rapids; Hill School, Pottstown, Pa.; Hyde Park, Ill.; Ionia; Jackson; Lake View, Ill.; Manistee; Michigan Military Academy, Orchard Lake; Minneapolis, Minn.; Monroe; Oak Park, Ill.; Ottawa, Ill.; Peoria, Ill.; Pontiac; Port Huron; Rockford, Ill.; Saginaw; Ypsilanti.
2. For courses leading to the degrees of A. B., B. S., and B. L.: Jefferson Township, Ill.
3. For courses leading to the degrees of Ph. B., B. S., and B. L.: Adrian; Alpena; Big Rapids; Birmingham; Chicago, Ill. (North Side, South Side, and West Side); Freeport, Ill.; Joliet, Ill.; Kenwood Institute, Chicago, Ill.; Lake, Ill.; Lansing; La Porte, Ind.; Marshall; Niles; Owosso; Traverse City; West Bay City.
4. For courses leading to the degrees of A. B., and PH. B.: Normal University, Academic Department, Normal, Ill.
5. For courses leading to the degrees of A. B., and B. L.: Buchanan; Greenville; Springfield, Ill.

6. For courses leading to the degrees of PH. B., and B. L.: Allegan; Caro; Corunna; Fenton.
 7. For courses leading to the degrees of B. S., and B. L.: Benton Harbor; Hastings; Mt. Clemens; Sturgis.
 8. For course leading to the degree of PH. B.: St. Clair.
 9. For course leading to the degree of B. S. (In General Science): Ludington.
 10. For course leading to the degree of B. S. (In Engineering): Manual Training School, Chicago, Ill.
 11. For course leading to the degree of B. L.: Charlotte; Eaton Rapids; Grand Haven; Howell; Raisin Valley Seminary; Toledo, O.; Vassar.
- Total, 69 schools.

COURSES OF INSTRUCTION.

The University provides a large number of courses of study in the various branches of learning, from which the student may choose his studies. The studies chosen may be pursued in any order, subject to certain regulations prescribed by the Faculty and to be found on a subsequent page. Some further particulars concerning the courses are given in a special Announcement furnished annually to students.

The courses offered are subject to change from year to year. Those offered for the year 1889-90 are as follows:*

GREEK.†

All students except those who are admitted to advanced standing, are required to pursue Course 1 before passing on to the other Courses. The Teachers' Seminary is open only to those who have completed all the prescribed Courses that can be taken in the first two years of university work.

FIRST SEMESTER.

1. Lysias; Xenophon's Symposium. *M, Tu, W, Th*, Sec. I, 10½-11½; Sec. II, 11½-12½. Professor PATTENGILL.
4. Demosthenes (Philippics); Lectures on the Greek Orators; Thucydides (Book VII). *M, Tu, W*, Sec. I, 3-4; Sec. II, 4-5. *Th*, Secs. I and II, 4-5. Professor D'OOGHE.

* For explanation of the terms *one-fifth Course*, *two-fifths Course*, etc., see page 74.

† SCHOOL OF CLASSICAL STUDIES AT ATHENS.—This University, through the generosity of some of its friends, has become a contributor to the support of the American School of Classical Studies at Athens. The school affords facilities for archaeological and classical investigation and study in Greece, and graduates of the Department of Literature, Science, and the Arts of this University are entitled to all its advantages without expense for tuition. Professor M. L. D'Ooghe was Director of the School for 1886-87.

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- 6a. Teachers' Seminary. Lectures on Greek Grammar. *Two-fifths Course. Hours arranged with instructor.* Professor D'Ooge.
- 7a. Seminary in Tragedy. Sophocles (Antigone, Electra, Philoctetes). *Th, 2-4. Two-fifths Course.* Professor D'Ooge.
Course 7a must be preceded by Course 5a or 5b.
8. Seminary. Plato's Republic. *F, 2-4. Two-fifths Course.* Professor D'Ooge.
9. Thucydides (Book V). *Tu, Th, 9½-10½.* Professor PATTENGILL.
10. Aristophanes (Peace, Wasps). *M, W, 9½-10½.* Professor PATTENGILL.

SECOND SEMESTER.

2. Homer (Odyssey). *Tu, W, Th, Sec. I, 10½-11½; Sec. II, 11½-12½.* Professor PATTENGILL.
3. History of Greek Literature. *F, 4-5.* Professor D'Ooge.
5. Dramatic Poetry. This Course may be elected as
 - 5a. Sophocles (Edipus Tyrannus); Aristophanes (Frogs). *M, Tu, W, Th, 4-5.* Professor D'Ooge;
 - or 5b. Euripides (Iphigenia in Tauris); Aristophanes (Frogs). *M, Tu, W, Th, 9½-10½.* Professor PATTENGILL.
- 6b. Teachers' Seminary. Greek Prose Composition. *One-fifth Course. Hour arranged with instructor.* Professor D'Ooge.
11. Hellenistic Greek: Selections from the Septuagint and from the New Testament. *M, W, 3-4.* Professor D'Ooge.
12. Greek Antiquities. Lectures on the public and private life and customs of the Greeks, illustrated by lantern views. *Th, 3-4.* Professor D'Ooge.
- [13. Reading and Interpretation of Greek Inscriptions. *M, W, 2-3.* Professor D'Ooge.
Course 13 is omitted in 1889-90.]
14. Seminary in Epic Poetry. Hesiod and Homer. *F, 9½-11½. Two-fifths Course.* Professor PATTENGILL.
15. Plato (Apology, Crito, Euthyphro). *Tu, F, 3-4.* Professor D'Ooge.

LATIN.*

Courses 1 and 2 must precede all the rest.

FIRST SEMESTER.

1. Livy (Book XXI); Grammar; Prose Composition. *Tu, W, F, Sec. I, 11½-12½; Sec. II, 2-3; Sec. III, 3-4; Sec. IV, 4-5.* Mr. DRAKE.

* Owing to the death of Professor Frieze, the work in Latin will have to be re-arranged, but the details cannot be given at the time this Calendar goes to press.

3. Horace (Odes and Satires), with studies in Roman archæology and life. *Tu, W, Th, F*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; Sec. II, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor KELSEY.
- [6. Plautus (Selected Plays). *M, W*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor KELSEY. Course 6 is omitted in 1889-90.]
7. Tacitus (Germania, Agricola). Lectures. *M, W, F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor FRIEZE.
9. Pliny (Letters). Lectures. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor FRIEZE.
10. Classical Antiquities and Art. Lectures. *Tu, Th*, 4-5. Professor FRIEZE.

Course 10 can be taken only by those who have completed either the work required for some degree, or an equivalent of such work.

11. Teachers' Seminary. Lectures on the methods, province, and scope of classical studies, and Training Course in Caesar and Latin Prose. *M*, 4-6. *Two-fifths Course*. Professor KELSEY.
Course 11 must be preceded by Courses 1, 2, 3, 4, and 7.
13. Lucretius (De Rerum Natura). *Tu, Th*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor KELSEY.
16. Seminary for graduate students in Latin. *W*, 3-5. Professor KELSEY. Undergraduates are not admitted to Course 16.

SECOND SEMESTER.

2. Terence and Plautus; Minor Latin Poets; Cicero (De Senectute). *M, Tu, W, F*, Sec. I, $11\frac{1}{2}$ - $12\frac{1}{2}$; Sec. II, 2-3; Sec. III, 3-4; Sec. IV, 4-5. Mr. DRAKE.
4. Quintilian (Book X), together with a systematic study of Roman Literature, illustrated by representative selections from several authors. *Tu, W, Th, F*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; Sec. II, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor KELSEY.
- [5. Horace (Odes, Books I-IV). *M, W*, $8\frac{1}{4}$ - $9\frac{1}{4}$. Professor KELSEY. Course 5 is omitted in 1889-90.]
8. Cicero (Tusculan Disputations). Lectures. *M, W, F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor FRIEZE.
12. Teachers' Seminary. Lectures on the methods, province, and scope of classical studies, and Training Course in Vergil and Latin Prose. *M*, 4-6. *Two-fifths Course*. Professor KELSEY.
Course 12 must be preceded by Courses 1, 2, 3, 4, and 7.
14. Seneca (Essays). Lectures. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor FRIEZE.
15. Seneca (Tragedies). Lectures. *W, F*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor FRIEZE.
17. Seminary for graduate students in Latin. *W*, 3-5. Professor KELSEY. Undergraduates are not admitted to Course 17.

SANSKRIT.

The Courses in Sanskrit are omitted in 1889-90.

FIRST SEMESTER.

- [1. Beginners' Course. Recitations from Whitney's Sanskrit Grammar, accompanied by lectures upon the comparative phonetics of the Sanskrit, Greek, Latin, and Germanic languages. *Two-fifths Course.*

Course 1 is open to candidates for a degree in Arts, who have pursued the study of Latin and Greek in the University at least four semesters, and have also some knowledge of German.]

- [3. Advanced Reading. Kalidasa's Sakuntala, Act I. *One-fifth Course.* Course 3 must be preceded by Course 2.]

SECOND SEMESTER.

- [2. Interpretation of texts contained in Lanman's Sanskrit Reader. *Two-fifths Course.*

Course 2 must be preceded by Course 1. At the wish of the class Course 2 is converted into a *three-fifths Course*, the additional hour being given to the reading and discussion of papers upon linguistic subjects.]

- [4. Advanced Reading. Kalidasa's Sakuntala, Acts II and III. *One-fifth Course.*]

FRENCH.

Except for students of Engineering, for whom special Courses, designated by letters of the alphabet, are arranged, Courses 1 and 2 must precede all others. Students who are required to take eight hours in French beyond Courses 1 and 2, are allowed to select from the Courses open to them.

FIRST SEMESTER.

1. Beginners' Course. Grammar and easy reading. *M, W, Th, F*, Sec. I, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Mr. MARCOU. Sec. II, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Assistant Professor DE PONT. Sec. III, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Mr. MARCOU. Sec. IV, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Mr. BELSER. Sec. V, 2-3. Mr. MARCOU.
3. Composition and Translation from English into French. *M, Th*, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Assistant Professor DE PONT.
6. Prose Writers of the Nineteenth Century: Mme. de Stael; Chateaubriand. *W, F*, 10 $\frac{1}{2}$ -11 $\frac{1}{2}$. Professor WALTER.
8. French Classic Dramas. *M, W, F*, 11 $\frac{1}{2}$ -12 $\frac{1}{2}$. Professor WALTER.
10. Poets of the Nineteenth Century: Lamartine. *M, Th*, 10 $\frac{1}{2}$ -11 $\frac{1}{2}$. Assistant Professor DE PONT.
12. LaFontaine (Choix de Fables). Advanced practice in conversation and analysis. *W, F*, 10 $\frac{1}{2}$ -11 $\frac{1}{2}$. Assistant Professor DE PONT.
Course 12 must be preceded by Course 8.
14. Seminary. Mémoires of the Seventeenth and Eighteenth Centuries. *M, Th*, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Professor WALTER.

- [16. French Phonetics. *Tu*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Mr. MARCOU.

Course 16 is open only to those who receive special permission. It is omitted in 1880-90.]

18. Pronunciation and Reading. *Th*, 2-3. Assistant Professor DE PONT.

20. Study of Old French. *M, W*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Mr. MARCOU.

SECOND SEMESTER.

2. Modern Prose and Plays; Grammar continued. *M, W, Th, F*, Sec.

I, $8\frac{1}{4}$ - $9\frac{1}{4}$. Mr. MARCOU. Sec. II, $8\frac{1}{4}$ - $9\frac{1}{4}$. Assistant Professor

DE PONT. Sec. III, 2-3. Mr. MARCOU.

4. Scientific Reading. *La Nature*. *M, W, Th, F*, 2-3. Assistant Professor DE PONT.

5. Advanced Composition. *M, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Assistant Professor DE PONT.

7. Classic French Prose. *La Bruyère*; *Voltaire*. *W, F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor WALTER.

9. Montaigne. *Tu, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor WALTER.

Course 9 is open to all candidates for the degree of A. B., who have completed Courses 1 and 2, and to such others as receive special permission.

11. Prose Writers of the Eighteenth Century: Rousseau (*Contrat Social* and *Selections*). *M, W, F*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor WALTER.

Course 11 is open only to such as receive special permission.

13. French Lyrics. *La Lyre Française*. *W, F*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Assistant Professor DE PONT.

15. Seminary. Victor Hugo (*Dramas*). *Th*, $10\frac{1}{2}$ - $12\frac{1}{2}$. *Two-fifths Course*. Assistant Professor DE PONT.

17. Teachers' Course. *M, W*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor WALTER.

Course 17 is open only to such as receive special permission.

19. Pronunciation and Reading, continuation of Course 18. *Tu*, 2-3. Assistant Professor DE PONT.

21. Study of Old French. *M, W*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Mr. MARCOU.

SPECIAL COURSES IN FRENCH FOR STUDENTS OF ENGINEERING.

Students of Engineering are not admitted to the other Courses offered in French, except by special permission.

FIRST SEMESTER.

- B. Narrative Prose. Daudet's *Choix de Contes*; Souvestre's *Confession d'un Ouvrier*. *M, W*, 2-3. Mr. BELSER.

Course B is open to those who have taken Course A, or who have passed an admission examination in French.

- D. Scientific Reading. *W, F*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor WALTER.

SECOND SEMESTER.

- A. Beginners' Course. Grammar and Reader. *M, W, Th, F*, 2-3. Mr. BELSER.
 C. Descriptive Prose. *M, W*, 9½-10½. Mr. BELSER.

ITALIAN.

FIRST SEMESTER.

2. Continuation of Course 1. *Tu, Th*, 11½-12½. Professor WALTER.

SECOND SEMESTER.

1. Grandgent's Italian Grammar. Reader. *Tu, Th*, 11½-12½. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 2 in French.

3. Dante (Divina Commedia). Lectures and recitations. *Tu, Th*, 10½-11½. Professor WALTER.

Course 3 must be preceded by Courses 1 and 2.

SPANISH.

FIRST SEMESTER.

1. Knapp's Spanish Grammar and Spanish Readings. *Tu, Th*, 8¼-9¼. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 2 in French.

SECOND SEMESTER.

2. Continuation of Course 1. *Tu, Th*, 8¼-9¼. Professor WALTER.

GERMAN.

Except for students of Engineering, for whom special Courses designated by letters of the alphabet, are arranged, the required work in German is all included in Courses 1, 2, 3, 4, which should be taken in the order of the numerals. The numbers above 4 designate advanced electives which can be taken only after conference with the instructor concerned.

FIRST SEMESTER.

1. Beginners' Course. Joynes-Meissner's German Grammar, and a German Reader. *T, W, Th, F*, Sec. I, 8¼-9¼; Sec. II, 9½-10½. Mr. RHOADES. Sec. III, 10½-11½; Sec. IV, 11½-12½. Mr. LANGE.
 3. Plays of Goethe and Lessing:—
 3a. Goethe's Tasso. *M, W, F*, 2-3. Professor THOMAS.
 3b. Goethe's Egmont. *M, W, F*, 9½-10½. Mr. LANGE.

- 3c. Goethe's Iphigenie. *T, Th*, 10½-11½. Mr. RHOADES.
- 3d. Lessing's Nathan der Weise. *M, W, F*, 10½-11½. Mr. RHOADES.
- 3e. Lessing's Minna von Barnhelm and Emilie Galotti. *M, W, F*, 11½-12½. Mr. RHOADES.
- 3f. Goethe's Götz von Berlichingen. *M, W, F*, 3-4. Professor THOMAS.
5. Goethe's Faust (First Part). *W, F*, 8¼-9¼. Professor THOMAS.
7. Middle High German. The Nibelungenlied. *T, Th*, 9½-10½. Mr. LANGE.
9. Seminary for German Literature of the Eighteenth Century. *M*, 8¼-9¼, and another hour arranged with instructor. *Two-fifths Course*. Professor THOMAS.
11. Egelhaaf's Grundzüge der deutschen Litteraturgeschichte. *T, Th*, 8¼-9¼. Professor THOMAS.
- [13. The Relation of German to English: a general introduction to Germanic philology. Lectures. *One-fifth Course*. Professor THOMAS. Course 13 is omitted in 1889-90.]

SECOND SEMESTER.

2. Plays of Schiller, with exercises in writing German:—
- 2a. Die Jungfrau von Orleans. *Tu, W, Th, F*, Sec. I, 8¼-9¼; Sec. II, 9½-10½. Mr. RHOADES.
- 2b. Wilhelm Tell. *Tu, W, Th, F*, 2-3. Mr. RHOADES.
- 2c. Maria Stuart. *T, W, Th, F*, 11½-12½. Mr. LANGE.
4. German composition and rapid reading in modern prose:—
- 4a. Stein's German Exercises. *F*, Sec. I, 9½-10½; Sec. II, 10½-11½. Mr. LANGE. Sec. III, 2-3; Sec. IV, 3-4. Mr. BELSER.
- 4b. Prose selections from Goethe and recent minor classics. *M, W*, 9½-10½. Mr. LANGE.
- 4c. Prose selections from Heine and recent minor classics. *Tu, Th*, 10½-11½. Mr. LANGE.
- 4d. Prose selections from Schiller and recent minor classics. *Tu, Th*, 11½-12½. Mr. RHOADES.
- 4e. Prose selections from Lessing and recent minor classics. *W, F*, 3-4. Mr. RHOADES.
6. Goethe's Faust (Second Part). *W, F*, 8¼-9¼. Professor THOMAS.
8. Old High German; Braune's Althochdeutsches Lesebuch. *Two-fifths Course*. Hours arranged with instructor. Mr. LANGE.
10. Seminary for German Literature of the Nineteenth Century. *M*, 8¼-9¼, and another hour arranged with instructor. *Two-fifths Course*. Professor THOMAS.
12. Lessing's Laokoon. *Tu, Th*, 10½-11½. Professor THOMAS.
14. German Lyric Poetry. Recitations from Buchheim's Deutsche Lyrik. *W, F*, 10½-11½. Professor THOMAS.

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SPECIAL COURSES IN GERMAN FOR STUDENTS OF ENGINEERING.

Students of Engineering are not admitted to the other Courses offered in German except by special permission.

FIRST SEMESTER.

- A. Beginners' Course. Joynes-Meissner's German Grammar, and a
• German Reader. *Tu, W, Th, F, 8¼-9¼.* Mr. BELSER.
C. Descriptive Prose. Deutschland und die Deutschen. *Tu, Th, 3-4.*
Mr. BELSER.

SECOND SEMESTER.

- B. Narrative Prose. Fouqué's Undine. *Tu, Th, 8¼-9¼.* Mr. BELSER.
D. Scientific Reading. Schroot's Der Dampf. *W, F, 8¼-9¼.* Mr.
BELSER.

GOTHIC.

SECOND SEMESTER.

1. Gothic Grammar, with interpretation of texts and comparative study
of Germanic word forms. Text-book: Braune's Gotische Gram-
matik, or G. H. Balg's translation of the same. *Two-fifths Course.*
Hours arranged with instructor. Professor THOMAS.

SWEDISH.

The Courses in Swedish are open only to students who receive special permission. They are omitted in 1889-90.

FIRST SEMESTER.

- [1. Modern Swedish Grammar, and the reading of prose selections. *One-fifth Course.* Professor THOMAS.]

SECOND SEMESTER.

- [2. Tegnér's Frithjof's Saga and selections from Runeberg. *One-fifth Course.* Professor THOMAS.]

DANISH-NORWEGIAN.

The Courses in Danish-Norwegian are open only to students who receive special permission.

FIRST SEMESTER.

1. Modern Danish-Norwegian Grammar and the reading of prose selections. *One-fifth Course.* *Hour arranged with instructor.* Professor THOMAS.

SECOND SEMESTER.

2. Readings from Andersen and Björnson. *One-fifth Course. Hour arranged with instructor.* Professor THOMAS.

ENGLISH AND RHETORIC.

1. Composition and Speeches. Each student presents two speeches. *M, Th, Sec. I, 2-3; Sec. II, 3-4. Tu, F, Sec. III, 2-3; Sec. IV, 3-4.* Mr. SCOTT.

In the first semester Course 1 is designed especially for candidates for the degrees of A. B. and Ph. B.; in the second semester, for all other students.

2. Rhetoric. Each student presents two essays. Additional essays are required if in any case they are deemed necessary. *M, W, Sec. I, 2-3; Sec. II, 3-4.* Assistant Professor HEMPL.

Course 2 must be preceded by Course 1, and by Course 1 or Course 2 in Philosophy.

3. English Literature; Period of Anglo-Saxon. Text-books: Sweet's Anglo-Saxon Primer and Sweet's Reader (Prose). *M, W, Sec. I, 4-5; Sec. II, 5-6.* Mr. LANGE.

5. English Literature; Period of Early Modern English. Text-books: Morris's Prologue and Knight's Tale, and Morley and Tyler's Manual of English Literature, Part III. *Tu, Th, Sec. I, 2-3; Sec. II, 3-4.* Assistant Professor HEMPL.

Course 5 must be preceded by Course 1, and it is recommended that Courses 3 and 4 be taken before Course 5.

7. Select Writers of the Fourteenth Century. Piers Plowman and the Songs of Laurence Minot. *Tu, Th, 4-5.* Assistant Professor HEMPL.

Course 7 must be preceded by Courses 1 and 3.

9. Teachers' Course in English Grammar, critical and practical, on the basis of Whitney's Essentials of English Grammar. *Two-fifths Course. Hours arranged with instructor.* Professor DEMMON.

Course 9 is open to students who have passed Course 1 and have taken or are taking Course 3.

11. English Literature; Study of Masterpieces: More's Utopia; Bacon's Essays; Milton's Areopagitica; Burke's Reflections on the French Revolution; Carlyle's Sartor Resartus; George Eliot's Silas Marner; Spenser's Faery Queen, Book I; Shakespeare's Sonnets; Milton's Paradise Lost; Dryden's Absalom and Achitophel; Pope's Essay on Man; Wordsworth's Excursion; Tennyson's Princess. *Twice a week (once two hours; once one hour). M, Sec. I, 4-6; Tu, Sec. II, 9½-11½; Sec. III, 4-6; W, Sec. IV, 4-6; Th, Sec. V, 4-6; F, Secs. I-V, 4-5.* *Three-fifths Course.* Professor DEMMON.

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Course 11 must be preceded by Courses 2, 5, and 6.

SECOND SEMESTER.

1. Composition and Speeches. Each student presents two speeches. *M, W*, Sec. I, 2-3; Sec. II, 3-4. *Tu, Th*, Sec. III, 3-4; Sec. IV, 3-4. Mr. SCOTT.

See note to Course 1 in first semester.

2. Rhetoric. Each student presents two essays. Additional essays are required if in any case they are deemed necessary. *Tu, Th*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor HEMPL.

See note to Course 2 in first semester.

4. English Literature; Period of Transitional English. Text-book: Morris's Specimens of Early English, Part I. *M, W*, 3-4. Mr. LANGE.

6. English Literature; Period of Modern English. Text-book: Morley and Tyler's Manual of English Literature, Part IV. *M, W*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor HEMPL.

Course 6 must be preceded by Course 5.

8. Advanced Course in Anglo-Saxon. Text-book: Sweet's Reader (Poetry). *Two-fifths Course. Hours arranged with instructor.* Mr. LANGE.

10. Seminary. Reading and discussion of the whole or of parts of standard works in rhetoric and literary criticism. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor HEMPL.

Course 10 is open to students who have passed Course 2.

12. English Literature; Study of Shakespeare. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Richard II, the two parts of Henry IV, Henry V, Richard III, Hamlet, Macbeth, Othello, King Lear, and Coriolanus. *Twice a week (once two hours; once one hour).* *M*, Sec. I, 9½-11½; Sec. II, 4-6; *Tu*, Sec. III, 4-6; *F*, Secs. I, II, and III, 4-5. *Three-fifths Course.* Professor DEMMON.

Course 12 must be preceded by Course 11.

13. The History of the English Drama. Lectures. *Th*, 3-4. Professor DEMMON.

Course 13 must be preceded by Courses 5 and 10.

14. American Literature Seminary. Authors studied: Irving, Poe, Hawthorne, Bryant, Longfellow, Emerson, Bayard Taylor, Whittier, Holmes, Lowell, Howells and James. *Two-fifths Course. Hours arranged with instructor.* Professor DEMMON.

Course 14 must be preceded by Course 11. Representative works of the authors above named will be studied and compared with masterpieces of British authors, and an attempt made to discover the distinctively "American" element.

COURSES IN ELOCUTION AND ORATORY.

In addition to the Courses above announced the following Courses in Elocution and Oratory, designated as English A, B, C, etc., are given.

FIRST SEMESTER.

- A. Elocution. Exercises in vocal culture, breathing, position and gesture; phonology and pronunciation; elements of quality and force of voice, with their applications. *M, W*, Sec. I, $10\frac{1}{2}$ - $11\frac{1}{2}$; Sec. II, $11\frac{1}{2}$ - $12\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- C. Study of Great Orators: Ancient Orators, and Modern Orators of Continental Europe. Lectures on methods of public address and sources of power; study of representative selections. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- Course C must be preceded by Courses A and B.
- E. Shakespearian reading. Critical study and reading of Julius Caesar and Much Ado About Nothing. *Tu, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- Course E must be preceded by Courses A and B.

SECOND SEMESTER.

- B. Elocution. Exercises in vocal culture continued; principles of action, elements of pitch and time, and emphasis, with their applications. *M, W*, Sec. I, $10\frac{1}{2}$ - $11\frac{1}{2}$; Sec. II, $11\frac{1}{2}$ - $12\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- Course B must be preceded by Course A.
- D. Study of Great Orators: English and American Orators. *Tu, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- Course D must be preceded by Courses A, B, and C.
- F. Oral Discussions. Designed to develop readiness of extemporization. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Assistant Professor TRUEBLOOD.
- Course F must be preceded by Course 2 and by Courses A and B.



HISTORY.

FIRST SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F*, Sec. I, $8\frac{1}{4}$ - $9\frac{1}{4}$; Sec. II, 3-4; Sec. III, 4-5. Assistant Professor McLAUGHLIN.
- Course 1 is also given in the second semester, and students are expected to begin their work in History with this Course.
3. Constitutional History of the United States. Text-book: Von Holst. *Tu, Th*, Sec. I, 3-4; Sec. II, 4-5. Assistant Professor McLAUGHLIN.

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7. History of Europe during the Sixteenth and Seventeenth Centuries. Lectures. *Tu, Th*, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Professor HUDSON.
10. History of Europe since the Congress of Vienna. Lectures, with quiz on lectures, and reading. *M, W, F*, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Professor HUDSON.

Course 10 must be preceded by two Courses in History.

11. Seminary. Constitutional History of the United States. *F*, 10 $\frac{1}{2}$ -12 $\frac{1}{2}$. *Two-fifths Course*. Professor HUDSON.

Course 11 must be preceded by Courses 3 and 4.

12. Comparative Constitutional Law. Lectures. *M, W*, 5-6. Professor HUDSON.

Course 12 is designed only for advanced students, and must be preceded by at least three Courses in History.

SECOND SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F*, 3-4. Assistant Professor McLAUGHLIN.
See note to Course 1 in first semester.

2. American Colonial History. Lectures. *M, W*, 4-5. Assistant Professor McLAUGHLIN.

4. Constitutional History of the United States, continuation of Course 3. Text-book: Von Holst. *Tu, Th*, Sec. I, 4-5; Sec. II, 5-6. Assistant Professor McLAUGHLIN.

Course 4 must be preceded by Course 3.

5. Constitutional Law of the United States. Text-book: Cooley. *Tu, Th*, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Assistant Professor McLAUGHLIN.

Course 5 must be preceded by Course 3.

6. History of the Middle Ages. Text-book: Guizot. *M, W*, 9 $\frac{1}{2}$ -10 $\frac{1}{2}$. Professor HUDSON.

8. History of Europe during the Eighteenth Century. Lectures. *Tu, Th*, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Professor HUDSON.

9. History of the French Revolution. Lectures. *M, W*, 8 $\frac{1}{4}$ -9 $\frac{1}{4}$. Professor HUDSON.

13. Seminary. Comparative Constitutional Law. *F*, 9 $\frac{1}{2}$ -11 $\frac{1}{2}$. *Two-fifths Course*. Professor HUDSON.

Course 13 must be preceded by Course 12.

PHILOSOPHY.

A student intending to take all the work offered in Philosophy should take the Courses in about the order of their numbers, beginning with Course 1 in the second year of residence at the University. To students not intending to make a specialty of Philosophy, it is a matter of indifference whether Courses 3, 4, 5, and 7 are taken in their third or fourth year.

FIRST SEMESTER.

2. General Psychology. Text-book: Dewey's Psychology. *M, W, F*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; *Tu, Th, F*, Sec. II, $8\frac{1}{4}$ - $9\frac{1}{4}$. Mr. TUFTS.
3. History of Ancient and Mediaeval Philosophy. Lectures. *M, W, F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Mr. TUFTS.
8. Political Philosophy. Lectures. *Tu, Th*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor DEWEY.
Course 8 must be preceded by Course 7.
9. Kant's Critique of Pure Reason, Mahaffy and Bernard's edition, with lectures. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor DEWEY.
Course 9 must be preceded by Courses 4 and 5.
10. Advanced Logic. Lectures. *M, W, F*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor DEWEY.
Course 10 must be preceded by Courses 1, 2, and 5.
11. Æsthetics; or, The Philosophy of the Beautiful in Nature, and in the Products of Human Art. Lectures. *Tu, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Mr. SCOTT.
Course 11 must be preceded by Courses 2 and 5.

SECOND SEMESTER.

1. Elementary Logic. Text-book: Jevons's Lessons. *Tu, Th*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; *W, F*, Sec. II, $8\frac{1}{4}$ - $9\frac{1}{4}$; Sec. III, $9\frac{1}{2}$ - $10\frac{1}{2}$. Mr. TUFTS.
4. History of Modern Philosophy. Lectures. *M, W, F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Mr. TUFTS.
Course 4 should be preceded by Course 3.
5. Introduction to Philosophy. Lectures. *Tu, Th*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor DEWEY.
Course 5 must be preceded by Course 2.
7. Ethics. Lectures. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor DEWEY.
Course 7 must be preceded by Course 2.
12. Hegel's Logic, Wallace's translation, with reports and lectures. *W, F*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor DEWEY.
Course 12 must be preceded by Course 10. It should also be preceded by Course 9.
13. Seminary. Studies in the History of Political Philosophy. *Two-fifths Course. Hours arranged with instructor.* Professor DEWEY.
Course 13 is open to graduate students who have taken Course 8, and to others only by special permission.

THE SCIENCE AND THE ART OF TEACHING.

Students who wish to prepare themselves for ordinary class-room duties are advised to pursue Course 1, if they can take but one; those who propose to assume the management of high schools, or graded schools, should take Course 5 in connection with Course 1. In both cases, however, it is desirable for them to pursue Course 2. The order in which Courses 1 and 2 are taken is not material. Students are recommended

to take Course 1 or Course 2 before the historical Courses. A course of reading is prescribed in connection with Courses 1 and 2.

FIRST SEMESTER.

1. Practical: the arts of teaching and governing; methods of instruction and general school-room practice; school hygiene; school law. Recitations and lectures. Text-book: Compayré's Lectures on Pedagogy. *Tu, W, Th, F*, 2-3. Professor HINSDALE.
3. History of Education: ancient and mediaeval. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th*, 5-6. Professor HINSDALE.
5. School Supervision: embracing general school management, the art of grading and arranging courses of study, the conduct of institutes, etc. Recitations and lectures. Text-book: Payne's Chapters on School Supervision. *M, W, F*, 8¼-9¼. Professor HINSDALE.

SECOND SEMESTER.

2. Theoretical and critical: the principles underlying the arts of teaching and governing. Lectures. *Tu, W, Th, F*, 2-3. Professor HINSDALE.
4. History of Education: modern. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th*, 5-6. Professor HINSDALE.
6. The comparative study of educational systems, domestic and foreign. Lectures. *Tu, Th*, 8¼-9¼. Professor HINSDALE.
7. Seminary. Study and Discussion of special topics in the History and Philosophy of Education. *M, W*, 8¼-9¼. Professor HINSDALE.

POLITICAL ECONOMY.

FIRST SEMESTER.

1. Principles of Political Economy. Lectures and recitations. Lectures, *M, W, F*, 2-3. Professor ADAMS. Recitations, *Tu*, Sec. I, 2-3; *Th*, Sec. II, 2-3; *F*, Sec. III, 3-4. Mr. HICKS.
3. Principles of the Science of Finance. Lectures and recitations. Text-book: Adams's Public Debts. Lectures, *M, W*, 11½-12½. Professor ADAMS. Recitations, *F*, 11½-12½. Mr. HICKS.
- Course 3 must be preceded by Course 1.
5. History of Economic Thought. Text-book: Ingram's History of Political Economy; with assigned readings. *Tu*, 11½-12½. Professor ADAMS.

Course 5 must be preceded by Course 1, and by either Course 2 or Course 4.

- [9. Seminary in Economics. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor ADAMS.

Course '9 is designed for candidates for advanced degrees. It is omitted in 1889-90.]

11. Foreign Commercial Relations of the United States. *M, W*, 4-5. Mr. HICKS.

Course 11 must be preceded by Courses 1 and 2.

SECOND SEMESTER.

2. Unsettled Questions in Political Economy. Lectures, embracing a history of the development of Political Economy since Mill, commercial crises, free trade and protection, railroads, and immigration. *M, W, F*, 2-3. Professor ADAMS.

Course 2 must be preceded by Course 1.

4. Social and Industrial Reforms. Lectures, embracing a discussion of the development of industrial classes, poor-law legislation, criminal legislation, the labor problem, and socialism. *Tu, Th*, 11½-12½. Professor ADAMS.

Course 4 must be preceded by Course 1.

6. Tariff Legislation in the United States. Text-book: Taussig's *Tariff History of the United States*; with assigned readings. *M*, 11½-12½. Mr. HICKS.

Course 6 must be preceded by Courses 1, 2, and 3.

- [10. Seminary in Economics. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor ADAMS.

Course 10 is designed for students who have taken Courses 1 and 2. It is omitted in 1889-90.]

12. Foreign Commercial Relations of the United States. *M*, 3-5. *Two-fifths Course*. Mr. HICKS.

Course 12 must be preceded by Courses 1 and 2.

INTERNATIONAL LAW.

FIRST SEMESTER.

1. Lectures on International Law. *Tu, Th*, 2-3. President ANGELL.

Course 1 is open only to those who have completed two Courses in History; Course 7 is especially recommended as one of the two.

SECOND SEMESTER.

2. History of Treaties. *Tu, Th*, 2-3. President ANGELL.

Course 2 must be preceded by Course 1.

MUSIC.

The Courses in Music, taken in the regular order of the numerals (1 to 8), represent four years' work. They are open to students who

evinced sufficient musical ability to pursue them with profit, and must be taken in the order indicated. No previous knowledge of music is required for admission to Course 1, but those who wish to take the Course must first satisfy the instructor that they can do so to advantage. Students properly qualified may be admitted on examination to the advanced Courses, and may, if they desire, pursue the study of Instrumentation and Composition.

FIRST SEMESTER.

1. Science and Practice of Choral Music. *Tu, Th*, 5-6. Professor STANLEY.
3. Science of Harmony. *Tu, F*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; Sec. II, $10\frac{1}{2}$ - $11\frac{1}{2}$; Sec. III, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor STANLEY.

Course 3 must be preceded by Course 2, and sufficient technical ability to play a common hymn tune on the piano or organ is also required.

5. Simple Counterpoint. *M, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor STANLEY.
- [7. Imitation. Canon. Choral Vorspiel. Professor STANLEY.
Course 7 is omitted in 1889-90.]

9. The History of Music. Lectures. *W, F*, 5-6. Professor STANLEY.

Course 9 is open to students who have taken or are taking Course 1, and to such others as receive special permission.

SECOND SEMESTER.

2. Science and Practice of Choral Music, continuation of Course 1. *Tu, Th*, 5-6. Professor STANLEY.
4. Science of Harmony, continuation of Course 3. *Tu, F*, Sec. I, $9\frac{1}{2}$ - $10\frac{1}{2}$; Sec. II, $10\frac{1}{2}$ - $11\frac{1}{2}$; Sec. III, $11\frac{1}{2}$ - $12\frac{1}{2}$. Professor STANLEY.

6. Double Counterpoint. *M, Th*, $9\frac{1}{2}$ - $10\frac{1}{2}$. Professor STANLEY.
- [8. Fugue. Musical Form. Professor STANLEY.
Course 8 is omitted in 1889-90.]

10. Continuation of Course 9. Lectures. *W, F*, 5-6. Professor STANLEY.

BIBLIOGRAPHY.

SECOND SEMESTER.

1. Historical, Material, and Intellectual Bibliography. Lectures. *W*, 3-4. Professor R. C. DAVIS.

MATHEMATICS.

Students of Engineering, and those desiring to make a specialty of Mathematics will take, in order, Courses 1, 2, 3, 4, 5, 6. Other students will take in order 1a, 2, 3a, 4a. Courses 7, 8, 9, 10, 11, 12, 13 are

elective Courses, for which application should be made beforehand to the instructor in charge.

FIRST SEMESTER.

1. Trigonometry and Algebra. *M, Tu, W, Th*, Secs. I and II, 4-5; Secs. III and IV, 5-6. Secs. I and III, Mr. HASKELL. Sec. II, Mr. HUSSEY. Sec. IV, Mr. ZIWET.
- 1a. Plane Trigonometry and Algebra. *Tu, W, F*, Secs. I and II, $8\frac{1}{4}$ - $9\frac{1}{4}$; *M, Tu, F*, Secs. III, IV, and V, $9\frac{1}{2}$ - $10\frac{1}{2}$; *M, W, Th*, Secs. VI and VII, $10\frac{1}{2}$ - $11\frac{1}{2}$; *W, Th, F*, Secs. VIII and IX, $11\frac{1}{2}$ - $12\frac{1}{2}$. Secs. I, V, VI, and IX, Mr. HUSSEY. Secs. II, IV, and VII, Mr. HASKELL. Secs. III and VIII, Mr. ZIWET.
3. Analytic Geometry and Calculus. *M, Tu, W, Th, F*, Sec. I, 3-4; Secs. II and III, 4-5. Secs. I and II, Assistant Professor COLE. Sec. III, Mr. ZIWET.
- 3a. Analytic Geometry and Calculus. *M, Tu, W, Th*, 3-4. Professor BEMAN.
5. Advanced Analytic Geometry and Calculus. *M, Tu, W, Th*, 4-5. Professor BEMAN.
6. Analytical Mechanics. *Tu, W, Th, F*, 5-6. Assistant Professor COLE.
7. Modern Geometry. *M, W*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Assistant Professor COLE.
13. Mathematical Reading. *Hours and credit arranged with instructor.*
Course 13 is designed to give advanced students an opportunity to read standard mathematical works under the direction of the Faculty.

SECOND SEMESTER.

2. Algebra and Analytic Geometry. *Tu, W, Th, F*, Secs. I, II, and III, $8\frac{1}{4}$ - $9\frac{1}{4}$; *M, Tu, Th, F*, Secs. IV, V, and VI, $9\frac{1}{2}$ - $10\frac{1}{2}$; *M, Tu, W, Th*, Secs. VII and VIII, $10\frac{1}{2}$ - $11\frac{1}{2}$; Sec. IX, 2-3; Secs. X and XI, 4-5. Secs. I, IV, and IX, Mr. ZIWET. Secs. II, V, VIII, and X, Mr. HASKELL. Secs. III, VI, VII, and XI, Mr. HUSSEY.
4. Analytic Geometry and Calculus, continuation of Course 3. *M, Tu, W, Th, F*, Secs. I and II, 3-4; Sec. III, 4-5. Secs. I and III, Assistant Professor COLE. Sec. II, Mr. ZIWET.
- 4a. Analytic Geometry and Calculus, continuation of Course 3a. *M, Tu, W, Th*, 3-4. Professor BEMAN.
8. Modern Higher Algebra. *Tu, Th*, $11\frac{1}{2}$ - $12\frac{1}{2}$. Assistant Professor COLE.
9. Differential Equations. *Tu, Th*, 2-3. Professor BEMAN.
10. Quaternions. *Tu, W, Th*, 4-5. Professor BEMAN.
11. Elements of the Theory of Functions. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor COLE.
12. Mathematical Theory of Electricity. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor COLE.

13. Mathematical Reading. *Hours and credit arranged with instructor.*
See note to Course 13 in first semester.

PHYSICS.

FIRST SEMESTER.

1. Mechanics, Sound, and Light. *M, Tu, W, Th, F, 11½-12½.* Professor CARHART.

Course 1 is open to those who have passed an entrance examination in Physics, and to all others who have sufficient preparation. A knowledge of Plane Trigonometry is indispensable.

4. Primary and Secondary Batteries. *Lecture, once a week; laboratory work, once a week. Hours arranged with instructors.* Professor CARHART and Mr. PATTERSON.

Course 4 must be preceded by Course 2.

5. Electrical Units and Measurements. This Course may be elected as
5a. Lectures, *twice a week, 2-3; laboratory work, three times a week, between 9½ and 12½, or between 2 and 5;*
or 5b. *Twice a week, between 9½ and 12½, or between 2 and 5.*
Professor CARHART and Mr. PATTERSON.

Course 5 must be preceded by Courses 2, and either 3a or 3b; 5a is a prescribed Course for students of Electrical Engineering; 5b is designed to meet the wants of students of Civil, Mechanical, or Mining Engineering who do not have time to take 5a.

6. Physical Laboratory work in Sound and Light. *Three times a week, between 9½ and 12½.* Professor CARHART.

Course 6 must be preceded by Courses 1 and either 3a or 3b.

7. Mathematical Electricity. *Tu, Th, 8¼-9¼.* Mr. PATTERSON.

Course 7 must be preceded by Course 2; a knowledge of Calculus is also required.

SECOND SEMESTER.

2. Electricity, Magnetism, and Heat. *M, Tu, W, Th, F, 11½-12½.*
Professor CARHART.

Course 2 must be preceded by Course 1.

3. Physical Laboratory work for beginners. This Course may be elected as
3a. *Three times a week, between 9½ and 12½, or between 2 and 5;*
or 3b. *Twice a week, between 9½ and 12½, or between 2 and 5.*
Mr. PATTERSON.

Course 3 must be preceded by Course 1.

8. Dynamo-Electric Machinery. This Course may be elected as
8a. Lectures, *Tu, Th, 2-3; laboratory work, twice a week, between 2 and 5;*
or 8b. Lectures, *Tu, Th, 2-3; laboratory work, once a week, between 2 and 5.* Professor CARHART and Mr. PATTERSON.

Course 8 must be preceded by Courses 2 and either 5a or 5b.

9. Distribution of Electricity, and Photometry of Electric Lamps. Lectures, *twice a week*; laboratory work, *twice a week*. Hours arranged with instructors. Professor CARHART and Mr. PATTERSON.
- Course 9 must be preceded by Course 8a or 8b.

GENERAL CHEMISTRY.

To students desiring a competent knowledge of General Chemistry, the following Courses are suggested: Course 1 in Physics, and Courses 1 and 3 in General Chemistry.

To those desiring to study Analysis, Course 1 and either Course 2 or Course 3 in General Chemistry are suggested as furnishing a good preparation for work in Applied Chemistry.

FIRST SEMESTER.

2. Laboratory work in General Chemistry. *Three times a week, afternoons, two hours each exercise.* Dr. FREER and Mr. McGEE.

Course 2 must be preceded by Course 1. It makes use of laboratory methods for general, as distinguished from technical, purposes.

4. Lectures on Chemical Philosophy. *Tu, Th, 2-3.* Dr. FREER.

Course 4 must be preceded by Courses 1 and either 2 or 3, and by one or more Courses in Analytical Chemistry.

- [5. Gas Analysis. *Three-fifths Course.* Dr. FREER.

Course 5 must be preceded by Course 3. It is omitted in 1889-90.]

SECOND SEMESTER.

1. General Experimental Chemistry. Lectures, *M, W, F, 11½-12½*; recitations, *Tu, Th, 11½-12½.* Dr. FREER.

3. General Experimental Chemistry. Laboratory work. *Five times a week, afternoons, two hours each exercise.* Dr. FREER and Mr. McGEE.

Course 3 must be preceded by Course 1. It makes use of laboratory methods for general, as distinguished from technical, purposes. It may be taken as a Teachers' Course.

ANALYTICAL CHEMISTRY AND ORGANIC CHEMISTRY.

The laboratory work requires from two to three hours daily, taken, in the first semester, between 1 and 5; in the second semester, between 1 and 6. Permission for forenoon hours is given when necessary.

Those entering upon the study of Analytical Chemistry for scientific purposes irrespective of technical application, should first take Courses 1 or 3, and 4, and if possible should reach Course 17. In Organic Chemistry, Course 10 should be taken first, and either Course 12 or Course 14 may be taken next. In Synthetic Research, Courses 10, 11, 12,

13, and 17 may be taken. For Commercial Analysis, Courses 10, 11, and 14 should be taken. For Metallurgical Analysis, Courses 1, 4, 5, 6, 7, and 9 are required. In preparation for Physiological Chemistry, Courses 1, 4, and 10 are recommended.

FIRST SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F*, Sec. I, 8¼-9¼; Sec. II, 9½-10½; laboratory work, *daily*. *Ten-fifths Course*. Professor JOHNSON.
10. Organic Chemistry. Lectures. *M, W, F*, 10½-11½. Professor PRESCOTT.

Course 10 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry, or Course 1 in General Chemistry.

EITHER FIRST OR SECOND SEMESTER.

4. Quantitative Analysis. *From October 1 to the holiday vacation; or from the last Monday in March to the end of the year*. Lectures, *three times a week*; laboratory work, *daily*. *Five-fifths Course*. Mr. SMITH.

Course 4 is open to those who have taken Course 1 or Course 3.

5. Advanced General Quantitative Analysis. Lecture, *once a week*; laboratory work, *daily*. *Five-fifths Course*. Mr. SMITH.

Course 5 is open to those who have taken Course 4.

6. Analytical Work of the Rolling-Mill and Mine-Laboratory. Lecture, *once a week*; laboratory work, *daily*. *Five-fifths Course*. Mr. SMITH.

Course 6 is open to those who have taken Course 4.

7. Analytical Work of the Rolling-Mill and Mine-Laboratory, continuation of Course 6. Lecture, *once a week*; laboratory work, *daily*. *Five-fifths Course*. Mr. SMITH.
 8. Blow-pipe Analysis. Lectures and laboratory work. *Daily for six weeks*. *Two-fifths Course*. Mr. WHYTE.
 9. Assaying Ores, dry way. Lectures and laboratory work. *Daily for six weeks*. *Two-fifths Course*. Mr. WHYTE.
 11. Organic Chemistry. Laboratory work. *Two-fifths Course*. Professor PRESCOTT.
- Course 11 is open to those who have taken Course 1 or Course 3. It must also be preceded or accompanied by Course 10.
12. Organic Chemistry. Ultimate Analysis and Synthetic Preparations. Laboratory work. *Five-fifths Course*. Professor PRESCOTT.
- Course 12 is open to those who have taken Courses 1, 4, and 10.
13. Organic Chemistry, continuation of Course 12. *Five-fifths Course*. Professor PRESCOTT.
 17. Original Investigation. Laboratory work and reading. *Five-fifths Course*.

18. Original Investigation, continuation of Course 17. *Five-fifths Course.*

Courses 17 and 18 are conducted by different instructors, according to the nature of the investigation, but students wishing to take them must first make application to Professor PRESCOTT. They must be preceded by Courses 1 and 4, and by such other studies as the investigation shall require.

SECOND SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F, 8¼-9¼*; laboratory work, *daily. Ten-fifths Course.* Professor JOHNSON.
2. Advanced Qualitative Analysis, continuation of Course 1, *until the last of March.* Recitations, *M, Tu, W, Th, F, 9½-10½*; laboratory work, *daily. Four-fifths Course.* Professor JOHNSON.
3. Qualitative Analysis. Recitations, *Tu, Th, 2-3*; laboratory work, *three times a week. Five-fifths Course.* Professor JOHNSON.

Course 3 is a short Course, designed for students of Civil and of Mechanical Engineering.

14. Proximate Organic Analysis, including Toxicology. Laboratory work. *Five-fifths Course.* Professor PRESCOTT.

Course 14 is open to those who have taken Courses 1 or 3, and 4 or 10.

15. Outlines of Chemical Technology. Lectures. *One-fifth Course.* Professor JOHNSON.

Course 15 is open to those who have taken Course 1 or Course 3.

16. Manufacture and Purification of Chemicals. *From the last Monday in March to the end of the year.* Recitation, *once a week*; laboratory work, *daily. Four-fifths Course.* Professor JOHNSON.

Course 16 is open to those who have completed Courses 1 and 2.

HYGIENE AND PHYSIOLOGICAL CHEMISTRY.

*FIRST SEMESTER.*1. Sanitary Science. Lectures. *Tu, Th, 10½-11½.* Professor VAUGHAN.*EITHER FIRST OR SECOND SEMESTER.*2. Physiological Chemistry. Lectures, *twice a week*; laboratory work, *daily. Seven-fifths Course.* Mr. NOVY.

Course 2 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.

3. Physiological Chemistry, continuation of Course 2 and of the same extent. Mr. NOVY.

4. Sanitary Examinations. Lectures, *twice a week*; laboratory work, *daily. Seven-fifths Course.* Mr. NOVY.

Course 4 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.

5. Sanitary Examinations, continuation of Course 4 and of the same extent. Mr. NOVY.
6. Original Research on the Causation of Disease, including a Course in Bacteriology. Laboratory work and reading. *Five-fifths Course.* Professor VAUGHAN.

Course 6 is designed for advanced students, and is open only to such as receive special permission.

7. Original Research on the Causation of Disease, continuation of Course 6 and of the same extent. Professor VAUGHAN.

ASTRONOMY.

FIRST SEMESTER.

3. Modern Meteorology. Tu, F, 5-6. Professor HARRINGTON.
Course 3 requires an acquaintance with the elements of Physics.
6. Theoretical Astronomy. M, Tu, W, Th, F, 4-5. Professor HARRINGTON.

Course 6 should be preceded by Course 6 in Mathematics.

EITHER FIRST OR SECOND SEMESTER.

2. Elementary Practical Course. *One-fifth Course. Hour arranged with instructor.* Mr. W. W. CAMPBELL.

For Courses 2, 5, and 8, a general knowledge of Astronomy and Spherical Trigonometry is requisite.

4. Spherical and Practical Astronomy (for students of Civil Engineering). *Two-fifths Course. Hours arranged with instructor.* Mr. W. W. CAMPBELL.

Course 4 must be preceded by Courses 3 or 3a, 4 or 4a, and 5 in Mathematics.

5. Course for Time, Latitude, and Longitude. *One-fifth Course. Hour arranged with instructor.* Mr. W. W. CAMPBELL.

See note to Course 2.

8. Advanced Practical Course. *One-fifth Course. Hour arranged with instructor.* Mr. W. W. CAMPBELL.

See note to Course 2.

SECOND SEMESTER.

1. General Astronomy. M, W, F, 4-5. Professor HARRINGTON.
Course 1 requires a knowledge of Trigonometry.
7. Theoretical Astronomy. M, Tu, W, Th, F, 5-6. Professor HARRINGTON.

Course 7 should be preceded by Course 6 in Mathematics.

MINERALOGY.

FIRST SEMESTER.

1. Short Course. Lectures and practice. Lectures, M, F, Sec. I, 9½-

10½; Sec. II, 10½-11½; practice, *twice a week, at hours arranged with instructor. Two-fifths Course. Professor PETTEE.*

For Course 1 an elementary knowledge of Chemistry is desirable.

- [3. Advanced Course. *Hours and credit arranged with instructor. Professor PETTEE.*

Course 3 must be preceded by Course 1, or by Course 2. It is omitted in 1889-90.]

SECOND SEMESTER.

2. Mineralogy and Lithology. Lectures and practice. *M, Tu, W, Th, F, 8¼-10½. Five-fifths Course. Professor PETTEE.*

Course 2 can be taken only by those who are taking, or have taken, a Course in Analytical Chemistry.

GEOLOGY.

Course 3 or Course 5 may be taken as an advanced Course by students who have passed an entrance examination in Geology.

FIRST SEMESTER.

1. Elements of General Geology. The Earth's surface and the constitution of its crust. Erosion, sedimentation, change of level, mountain-making, geological dynamics, the history of life and the grand succession of geological events. Part I. Facts and Doctrines. *M, W, 3-4. Professor WINCHELL.*

See note to Course 2.

2. Oral Exercises. Supplementary to Course 1, and parallel with it; being a review with exercises on the geological map, and in various specific geological problems. *F, 3-4. Professor WINCHELL.*

Course 2 is intended to accompany Course 1; it may be taken, however, by any person already acquainted with the elements of Geology. Beginners in Geology must take both Courses. Students reviewing the subject by taking either Course 1 or Course 2 without the other, are held to the same examinations as those taking both Courses together.

3. Advanced Geology and Palæontology. Lectures, reading, and laboratory study. *Tu, Th, 3-4. Professor WINCHELL.*

Course 3 is designed for students who have taken Courses 1 and 2, or who enter the University with thorough preparation in the elements of Geology.

4. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week, 2-4. Professor WINCHELL.*

Courses 4 and 7 are designed for students aspiring to proficiency in Geology; they must be preceded by Courses 1 and 2 in Geology and also by Courses 1 and 2 in Zoology.

8. Economic Geology. *M, W, 5-6. Professor PETTEE.*

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Course 8 must be preceded by Course 2 in Mineralogy.

9. Geology of the United States. *Tu, Th*, 4-5. Professor PETTEE.

Course 9 is designed especially to meet the wants of students of Engineering.

SECOND SEMESTER.

5. Elements of General Geology. Part II. Theories. *M*, 3-4. Professor WINCHELL.

Course 5 can be taken only by those who have had Courses 1 and 2, or an equivalent. See note to Course 6.

6. Oral exercises, parallel with Course 5. *F*, 3-4. Professor WINCHELL.

Course 6 is intended to accompany Course 5. Students taking either Course 5 or Course 6 without the other are held to the same examinations as those taking both Courses together.

7. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week*, 2-4. Professor WINCHELL.

See note to Course 4 in first semester.

9. Geology of the United States. *Tu, Th*, 3-4. Professor PETTEE.

See note to Course 9 in first semester.

10. Geology in Education,—theoretical and practical. *Tu, Th*, 3-4. Professor WINCHELL.

Course 10 is not given unless elected by at least twelve persons.

GENERAL BIOLOGY.

FIRST SEMESTER.

1. Elements of Biology. A study of typical species of plants and animals, with reference to structure, development, and relationship. Lectures, *M, W*, 8¼-9¼; laboratory work, in the zoological laboratory, *forenoons*; in the botanical laboratory, *afternoons*. *Five-fifths Course*. Professor SPALDING and Assistant Professor REIGHARD.

SECOND SEMESTER.

2. Elements of Biology, continuation of Course 1. Lectures, *M, W*, 8¼-9¼; laboratory work in the zoological laboratory, *forenoons*; in the botanical laboratory, *afternoons*. *Five-fifths Course*. Professor SPALDING and Assistant Professor REIGHARD.

Course 2 must be preceded by Course 1.

ZOOLOGY.

1. GENERAL ZOOLOGY.

FIRST SEMESTER.

1. Systematic Zoology (Vertebrates). Lectures. *M, Tu, W, Th, F*, 8¼-9¼. Professor STEERE.

4. Original or Independent Work in Systematic Study of Vertebrates. This Course may be elected as 4a, *two-fifths Course*; 4b, *three-fifths Course*; or, 4c, *five-fifths Course*. Hours arranged with instructor. Professor STEERE.

Course 4 must be preceded by Courses 1 and 3. It may also be taken in the second semester.

5. Special Study of Invertebrate Groups. Laboratory work and reading with such instruction as the student may require. This Course may be elected as 5a, *Conchology, three-fifths Course*; 5b, *Study of Corals, three-fifths Course*; or 5c, *Entomology, three-fifths Course*. Hours arranged with instructor. Professor STEERE.

Course 5 must be preceded by Course 2. It may also be taken in the second semester.

SECOND SEMESTER.

2. Systematic Zoology (Invertebrates). Lectures. *M, Tu, W, Th, F, 8¼-9¼*. Professor STEERE.
 3. Identification of Vertebrates. Lectures and laboratory work. Lectures, *Tu, Th, 9½-10½*; laboratory work, *forenoons*. *Five-fifths Course*. Professor STEERE.
- Course 3 must be preceded by Course 1.
4. See Course 4 in first semester.
 5. See Course 5 in first semester.

II. ANIMAL MORPHOLOGY.

In addition to the Courses in General Zoology, the following Courses in Animal Morphology, designated as Zoology A, B, C, etc., are given. Courses A and B may accompany Courses 1 and 2 in General Biology. The other Courses must all be preceded by Courses 1 and 2 in General Biology. The Courses should be taken in the regular order of the letters A, B, C, etc., though students may pass directly from Course C to Course E. After 1889-90, it is intended to offer Courses C and D in alternate years.

FIRST SEMESTER.

- A. Structure and Development of Animal Types not included in the Courses in General Biology. Lectures and laboratory work. Lectures, *F, 9½-10½*; laboratory work, *forenoons*. *Three-fifths Course*. Assistant Professor REIGHARD.
- Course A is parallel with and supplementary to Course 1 in General Biology.
- C. Mammalian Anatomy. Lectures and recitations, *Tu, Th, 8¼-9¼*; laboratory work, *forenoons*. *Five-fifths Course*. Assistant Professor REIGHARD.
 - [D. Comparative Vertebrate Anatomy. Lectures and recitations, *Tu, Th, 8¼-9¼*; laboratory work, *forenoons*. *Five-fifths Course*. Assistant Professor REIGHARD.

Course D must be preceded by Course C. It is omitted in 1889-90.]

- F. Original work in Animal Morphology. This Course may be elected as F1, *two-fifths Course*; F2, *three-fifths Course*; or F3, *five-fifths Course*. Hours arranged with instructor. Assistant Professor REIGHARD.

SECOND SEMESTER.

- B. Structure and Development of Animal Types not included in the Courses in General Biology. Lectures and laboratory work. Lectures, F, 9½-10½; laboratory work, *forenoons*. *Three-fifths Course*. Assistant Professor REIGHARD.

Course B is parallel with and supplementary to Course 2 in General Biology.

- E. Vertebrate and Comparative Embryology. Lectures and laboratory work (embryology of chick and rabbit). Lectures, Tu, Th, 8¼-9¼; laboratory work, *forenoons*. *Five-fifths Course*. Assistant Professor REIGHARD.

Course E must be preceded by Course C or Course D.

- G. Original work in Animal Morphology. This Course may be elected as G1, *two-fifths Course*; G2, *three-fifths Course*; or G3, *five-fifths Course*. Hours arranged with instructor. Assistant Professor REIGHARD.

BOTANY.

Courses 1 and 2 in General Biology must precede all the Courses in Botany, except Courses 1 and 2, which may be pursued at the same time with the parallel Courses in General Biology.

FIRST SEMESTER.

1. A Study of the Structure and Development of Typical Species of Plants. Lectures and laboratory work. Lecture, F, 8¼-9¼; laboratory work, *afternoons*. *Three-fifths Course*. Mr. WORCESTER. Course 1 is parallel with Course 1 in General Biology.
3. Comparative Anatomy and Histology of Plants. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
- [5. Cryptogamic Botany. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.

Course 5 is omitted in 1889-90.]

7. Morphology and Physiology of Cryptogams. Investigations. This Course may be elected as 7a, *two-fifths Course*; 7b, *three-fifths Course*; or 7c, *five-fifths Course*. Hours arranged with instructor. Professor SPALDING.

SECOND SEMESTER.

2. Continuation of Course 1. Lectures and laboratory work. Lecture,

F, 8¼-9¼; laboratory work, *afternoons*. *Three-fifths Course*.
Mr. WORCESTER.

Course 2 is parallel with Course 2 in General Biology.

4. Physiology of Plants. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
 - [6. Cryptogamic Botany. Study of Fungi with reference to Vegetable Pathology. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
- Course 6 is omitted in 1889-90.]
8. Morphology and Physiology of Phanerogams. Investigations. This Course may be elected as 8a, *two-fifths Course*; 8b, *three-fifths Course*; or 8c, *five-fifths Course*. *Hours arranged with instructor*. Professor SPALDING.

PHYSIOLOGY.

FIRST SEMESTER.

1. Animal Physiology. Experimental lectures, recitation, and laboratory work. Lectures, *W, Th*, 11½-12½; recitation, *M*, 11½-12½; laboratory work, *Th*, 2-5. *Three-fifths Course*. Dr. HOWELL.

SECOND SEMESTER.

2. Animal Physiology, continuation of Course 1. Experimental lectures, recitation, and laboratory work. Lectures, *W, Th*, 11½-12½; recitation, *M*, 11½-12½; laboratory work, *Th*, 2-5. *Three-fifths Course*. Dr. HOWELL.

DRAWING.

In Courses 2, 4, 7, 8, and 9, attendance in the drawing room on the days indicated, is required for *one hour* in addition to the hour specified, and the hours of attendance should be consecutive, if possible.

FIRST SEMESTER.

1. Geometrical Drawing. *M, W*, 2-4. Assistant Professor J. B. DAVIS.
2. Topographical Drawing and Lettering. *Tu, Th*, 9½-10½ or 10½-11½. Professor DENISON.
3. Mechanical Drawing. *Tu, Th, F*, 2-4. Assistant Professor J. B. DAVIS.
4. Free-hand Drawing; Sketching; Pen and Ink Drawing. *M, W, F*, 9½-10½, 10½-11½, or 11½-12½. Professor DENISON or Miss HUNT.
9. Sketching of parts of machines. Lettering. *M, W, F*, 10½-11½. Professor DENISON.

Course 9 is designed especially for students of Mechanical Engineering.

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10. Continuation of Course 8. *Two-fifths Course. Hours arranged with instructor.* Professor DENISON or Miss HUNT.
13. Water-Color Drawing. *Three-fifths Course. Hours arranged with instructor.* Professor DENISON or Miss HUNT.

Course 13 must be preceded by Course 8.

SECOND SEMESTER.

5. Descriptive Geometry. *M, W, F, 8¼-10½.* Assistant Professor J. B. DAVIS and Professor DENISON.
Course 5 must be preceded by Course 1.
6. Shades, Shadows, and Perspective. *M, W, F, 9½-10½, and such additional time as may be found necessary to complete the work.* *Three-fifths Course.* Professor DENISON.
Course 6 must be preceded by Course 5.
7. Free-hand Drawing (advanced). *M, W, F, 10½-11½ or 11½-12½.* Professor DENISON or Miss HUNT.
8. Architectural and Water-Color Drawing. *Tu, Th, 10½-11½ or 11½-12½.* Professor DENISON or Miss HUNT.
14. Stereotomy. *Tu, Th, 9½-10½, and such additional time as may be found necessary to complete the work.* *Two-fifths Course.* Professor DENISON.

Course 14 must be preceded by Course 5.

SURVEYING.

FIRST SEMESTER.

1. Surveying: Compass; Transit; Level; Solar Compass; U. S. Surveys. Lectures and practice with instruments in the field. Lectures, *M, Tu, W, Th, F, 8¼-9¼*; practice *9½-12½.* *Five-fifths Course.* Assistant Professor J. B. DAVIS.

The field practice in Course 1 is designed to occupy all the forenoons, when the weather is suitable, during the months of October, November, and December.

4. Use of Instruments. *One-fifth Course. Hour arranged with instructor.* Assistant Professor J. B. DAVIS.

Course 4 is designed especially for students of Mechanical Engineering.

SECOND SEMESTER.

2. Higher Surveying; Plane Table; Sextant; Earth-work. *M, Tu, W, Th, F, 2-6.* *Five-fifths Course.* Assistant Professor J. B. DAVIS.
Course 2 must be preceded by Course 1.
3. Field work. *Four weeks entire, 8-12 and 1-5.* Assistant Professor J. B. DAVIS.

Course 3 is open only to students that are, or are intending to become, candidates for a degree in Engineering.

CIVIL ENGINEERING.

FIRST SEMESTER.

1. Principles of Mechanism; Drawing. *Tu, Th, 9½-11½.* Professor DENISON.
4. Graphical Analysis of Structures. *Tu, Th, 10½-11½.* Professor GREENE.

Course 4 requires at least a limited knowledge of Statics and must be preceded by Course 3.

5. Strength and Resistance of Materials. *M, W, 9½-10½.* Professor GREENE.

Course 5 must be preceded by Course 6 in Mathematics.

6. Engineering; Theory of Construction. *F, 9½-10½.* Professor GREENE.

Course 6 must be preceded by Course 6 in Mathematics.

7. Engineering Design. *M, Tu, W, Th, F, 2-5.* *Five-fifths Course.* Professor GREENE.

Course 7 accompanies Courses 5 and 6.

SECOND SEMESTER.

2. Dynamics of Machinery. *First half of semester. M, W, 8¼-9¼.* *One-fifth Course.* Professor COOLEY.

Course 2 is the same as the first half of Course 7 in Mechanical Engineering.

3. Graphical Analysis of Structures. *Tu, Th, 10½-11½.* Professor GREENE.
8. Engineering; Theory of Construction. *M, Tu, Th, F, 9½-10½.* Professor GREENE.
9. Hydraulics; Water Supply and Sewerage. *W, 9½-10½.* Professor GREENE.

MECHANICAL ENGINEERING.

In the Courses in Shop Practice, Assistant Professor TAYLOR is aided in the iron work by Mr. Smoots, in the foundry work by Mr. Winslow, in the wood work by Mr. Purfield, and in the forge shop by Mr. Vandervoort.

FIRST SEMESTER.

5. Principles of Mechanism; Drawing. *Tu, Th, 9½-11½, and additional time arranged with instructor.* *Three-fifths Course.* Professor DENISON.

Course 5 must be preceded by Course 1 or 1a in Mathematics, and by Courses 1 and 5 in Drawing.

8. Prime Movers; Water Wheels and Steam Engines. *Tu, Th, 11½-12½.* Professor COOLEY.

Course 8 must be preceded by Course 7.

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9. Thermodynamics; Hot-Air and Gas Engines, Air Compressors and Refrigerating Machines. *Tu, Th*, 5-6. Assistant Professor MINER.
Course 9 must be preceded by Course 7 and by Courses 1 and 2 in Physics.
10. Theory of Machine Design. *F*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor COOLEY.
Course 10 should be accompanied by Course 5 in Civil Engineering.
11. Design of General Machinery. *M, W, F*, 2-5. *Three-fifths Course*.
Professor COOLEY.
Course 11 should be accompanied by Course 10.
15. Experimental Laboratory Work. *Tu, Th*, 2-5. *Two-fifths Course*.
Professor COOLEY.
Course 15 must be preceded by Course 7.

EITHER FIRST OR SECOND SEMESTER.

1. Shop Practice in Wood Work and in Pattern Work. This Course may be elected as
1a, for beginners, *M, W, F*, $9\frac{1}{2}$ - $12\frac{1}{2}$; *three-fifths Course*;
or 1b, for advanced students, *three-fifths Course*. *Hours arranged with instructor*. Assistant Professor TAYLOR.

In the first semester the work in Course 1 is arranged especially for students of Mechanical Engineering; in the second semester for students of Civil Engineering.

2. Shop Practice in Forging. *Tu, Th*, two hours each day, forenoon or afternoon. *Two-fifths Course*. Assistant Professor TAYLOR.
3. Shop Practice in Iron Work. This Course may be elected as
3a, for beginners, *M, W, F*, $9\frac{1}{2}$ - $12\frac{1}{2}$; *three-fifths Course*;
or 3b, for advanced students; *three-fifths Course*. *Hours arranged with instructor*. Assistant Professor TAYLOR.
4. Shop Practice in Foundry Work. *Tu, Th*, three hours each day, between $9\frac{1}{2}$ and $12\frac{1}{2}$ or between 2 and 6. *Two-fifths Course*. Assistant Professor TAYLOR.

SECOND SEMESTER.

6. Design of Shop Machinery. *Tu, Th*, $8\frac{1}{4}$ - $10\frac{1}{2}$. Assistant Professor TAYLOR.
Course 6 must be preceded by Course 5, and by Courses 1 and 9 in Drawing.
7. Dynamics of Machinery. *M, W*, $8\frac{1}{4}$ - $9\frac{1}{4}$. Professor COOLEY.
Course 7 must be preceded by Course 6 in Mathematics, and by Course 1 in Physics.
12. Dynamics of Engines; Valve-Gears. *M, W*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor COOLEY.
Course 12 must be preceded by Course 8.
13. Machinery and Mill Work. *Tu, Th*, $10\frac{1}{2}$ - $11\frac{1}{2}$. Professor COOLEY.
14. Design of Engines and Boilers. *Tu, Th*, 2-5. *Two-fifths Course*.
Assistant Professor MINER.

16. Steam Engineering; Steam Generators; Steam Pumping and Hoisting Machinery; Practical work in the laboratory. *Three-fifths Course. Hours arranged with instructor.* Professor COOLEY.
Course 16 must be preceded by Course 8.

MARINE ENGINEERING.

FIRST SEMESTER.

1. Naval Architecture. *M, W, F, 11½-12½; Tu, Th, 9½-10½.* Assistant Professor MINER.

SECOND SEMESTER.

2. Marine Engines. *M, Tu, Th, 9½-10½.* Assistant Professor MINER.
3. Ship-Building. *Tu, Th, 11½-12½.* Assistant Professor MINER.

MINING ENGINEERING.

SECOND SEMESTER.

1. Mining. *Five-fifths Course. Hours arranged with instructor.* Professor PETTEE.

This Course is open only to those who are candidates for the degree of Bachelor of Science in Mining Engineering.

METALLURGY.

FIRST SEMESTER.

1. Fuel and Refractory Material, Iron, Steel, Copper, and Zinc. *M, W, F, 11½-12½.* Mr. WHYTE.

Course 1 must be preceded by Course 1 or 3 in Analytical Chemistry. Professor Langley's lectures on iron and steel are included here.

SECOND SEMESTER.

2. Lead, Silver, Gold, Mercury, and other metals. *Two-fifths Course. Hours arranged with instructor.* Mr. WHYTE.

Course 2 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

REQUIREMENTS FOR GRADUATION.

THE BACHELORS' DEGREES.

[For the Higher Degrees, see page 78.]

The degree of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science, or Bachelor of Letters may be earned either on the credit system, or on the university system. A description

of the latter is given on page 77. The requirements for graduation on the credit system are as follows:

GRADUATION ON THE CREDIT SYSTEM.

Under the credit system, the Faculty recommend for graduation students who have completed a stated number of *Full Courses* of study, according to the requirements specified below,—a part being prescribed and a part being chosen by the student. A *Full Course* of study comprises five exercises a week during a semester, whether in recitations, laboratory work, or lectures. It is not essential that the exercises constituting a *Full Course* shall be in one and the same branch of study. Thus, a part (two for instance, a *two-fifths Course*,) may be in Mathematics, a part (say two) in Greek, and a part (say one, a *one-fifth Course*,) in Latin, making a total of five.

The Degree of Bachelor of Arts.

To obtain the recommendation of the Faculty for the degree of Bachelor of Arts, the student must complete *twenty-four Full Courses*. The prescribed portion of this work is as follows:

In Greek; Courses 1, 2, 3, 4, and either 5a or 5b.

In Latin; Courses 1, 2, 3, 4.

In French; Courses 1, 2.

In English; Courses 1, 2.

In Philosophy; Course 1 or Course 2.

In Mathematics; Courses 1a, 2, 3a, 4a. *

But after a student has completed Courses 1, 2, and 3 in Greek, 1 and 2 in Latin, and 1a and 2, or an equivalent, in Mathematics, he may, at his option, discontinue the study of any one of these three subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-four Full Courses*.

The Degree of Bachelor of Philosophy.

To obtain the recommendation of the Faculty for the degree

* Instead of these Courses the student is permitted to take other Courses in Mathematics of equivalent amount.

of Bachelor of Philosophy, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Latin; Courses 1, 2, 3, 4.

In French;—(a), for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 2;

or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German;—(a), for those who entered *without* German, three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4;

or (b), for those who entered *with* German, one and three-fifths Full Courses, taken from options in Courses 3, 4.

In English; Courses 1, 2.

In Philosophy; Course 1 or Course 2.

In Mathematics; Courses 1a, 2, 3a, 4a. *

But after a student has completed Courses 1 and 2 in Latin, 1a and 2, or an equivalent, in Mathematics, and one and three-fifths Full Courses in German (if he entered without German) or Courses 1 and 2 in French (if he entered without French), he may, at his option, discontinue the study of Latin, of Mathematics, or of the modern language (French or German) which he began in the University. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in General Science).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in General Science, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French; (a), for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 2;

or (b), for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German; (a), for those who entered *without* German, three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4;

or (b), for those who entered *with* German, one and three-fifths

* Instead of these Courses the student is permitted to take other Courses in Mathematics of equivalent amount.

Full Courses, taken from the options in Courses 3, 4.

In English; Courses 1, 2.

In Philosophy; Course 1 or Course 2.

In Mathematics; Courses 1a, 2, or an equivalent.

In Physics; Course 1.

In General Chemistry; Course 1.

In Zoology, in Botany, or in General Biology; one Full Course.

In Physical Sciences or in Biological Sciences; five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

The Degree of Bachelor of Science (in Chemistry).

The requirements for the degree to be given on completion of the course in Chemistry may be found on page 94.

The Degree of Bachelor of Science (in Biology).

The requirements for the degree to be given on completion of the course in Biology may be found on page 95.

The Degree of Bachelor of Science, (in Civil, Mechanical, Mining, or Electrical Engineering).

The requirements for the degree to be given on completion of a course in Engineering may be found on pages 89 to 93.

The Degree of Bachelor of Letters.

To obtain the recommendation of the Faculty for the degree of Bachelor of Letters, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French; three and one-fifth Full Courses, including Courses 1, 2.

In German; three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4.

In English; Courses 1, 2, 3, 4.

In History; One and two-fifths Full Courses, including Courses 1, 7.

In Philosophy; Course 1 or Course 2.

In Mathematics; Course 1a.

But after a student has completed Courses 1 and 2 in French and one and three-fifths Full Courses in German, he may, at his

option, discontinue either of these two subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

GRADUATION ON THE UNIVERSITY SYSTEM.

Admission of Undergraduates.

1. The privileges of the university system are open to undergraduates who have completed their second year of residence, and have also completed at least twelve Full Courses, including all the prescribed work—offered in the first two years—for some one of the Bachelors' degrees.

Conditions for Entering Upon the Work.

2. Before beginning his work each undergraduate student must made application to the Registrar, and receive from him a certificate that he is entitled to enter upon the work. This application must be made before the student enters on the work of his third year of collegiate residence. In cases of exceptional character, however, the Faculty may grant permission to begin work on the university system at a later date.

Nature of the Work.

3. Students who are working on the university system are not held to the completion of a fixed number of Courses, but will be required to pursue three distinct lines of study, one "*major study*" and two "*minor studies*," and, at the close of the work, to pass a special examination on those studies. The committee in charge of any undergraduate's work may, however, at their option, accept in lieu of the final examination in a minor study, approved work, in the line of that study or germane to it, done on the credit system, equivalent to one-fourth of the amount of work the student would have been obliged to complete before graduation, if he had continued on the credit system.

Supervision of the Work.

4. The work of students carrying on their studies under the university system will be supervised by committees of the

Faculty. To carry this provision into effect, ten members of the Faculty have been chosen as chairmen of such committees. The other members of the committee in each case consist of the instructors in charge of the student's work. On making his application to the Registrar, each student will be directed to the chairman of the proper committee.

Attendance.

5. Students on the university system are subject to all the rules of this Department relating to attendance and to examinations. No student can be excused from any work that he has once entered upon, nor from any examination, without the consent of the instructor in charge of the work. Examinations passed at the close of each semester on ordinary-class work shall not count as an equivalent or in abatement of the final examination to be passed for a degree, except as provided above in paragraph 3.

Bachelors' Degrees.

6. Undergraduates who have been enrolled as candidates under the university system for at least three semesters, may be admitted to a special examination for a Bachelor's degree at a date not earlier than the end of three and a half years of residence at the University. Before being recommended for any Bachelor's degree, however, they must have completed all the Courses prescribed for that degree. The examination will be conducted by the regular committee and such other persons as they may ask to assist them.

THE HIGHER DEGREES.

Candidates for Higher Degrees will pursue their studies on the university system, described above. But for the Master's degree a course of study may at the discretion of the Faculty be approved, which does not confine the work rigorously to one major and two minor studies.

THE MASTERS' DEGREES.

The Masters' degrees are open to Bachelors of this Univer-

sity, or of any other reputable university or college; a residence of at least one year at the University is required, except as stated below.

1. *Residents*.—Those who have received a Bachelor's degree at this University, or at any other reputable university or college, may be recommended for the corresponding Master's degree after a year's residence at the University, provided they pass examination on an approved course of study (see paragraph 3 on page 77), and present a satisfactory thesis.

N. B. Students properly qualified may be permitted to pursue at the same time studies for a Master's degree, and studies in any of the professional schools, on condition that the term of study and residence in this Department be extended to cover two years instead of one.

2. *Non-Residents*.—A Bachelor of Arts, Bachelor of Science, Bachelor of Philosophy, or Bachelor of Letters, of this University, may be recommended for the corresponding Master's degree, without residence at the University, provided he spends at least two years on a course of study approved by the Faculty, presents a report of progress at least once in each semester to the chairman of the committee in charge of his work, passes the required examinations, and presents a satisfactory thesis. *This privilege is restricted to graduates of this University.*

THE DOCTORS' DEGREES.

1. The Doctors' degrees shall be conferred only on persons who have previously received a Bachelor's degree, either here or at some other reputable university or college, and also during residence here have made special proficiency in some one branch of study, and good attainments in two other branches, and have presented a thesis that shall evince the power of research and of independent investigation. It is not intended that the Doctors' degrees shall be won merely by faithful and industrious work for a prescribed time in some assigned course of study, and no definite term of required residence can be specified; but it is the practice of the University to require at least one full year of residence of candidates that have already earned a Mas-

ter's degree, and at least two full years of candidates that have previously taken only a Bachelor's degree.

2. The degree of Doctor of Philosophy shall be open to persons that have received the degree of Bachelor of Arts, or of Bachelor of Philosophy; the degree of Doctor of Science to persons that have received the degree of Bachelor of Science; and the degree of Doctor of Letters to persons that have received the degree of Bachelor of Letters.

THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, MINING ENGINEER, AND ELECTRICAL ENGINEER.

The requirements for these degrees may be found on page 93.

SPECIAL REGULATIONS RELATING TO THE HIGHER DEGREES.

1. Applicants for an advanced degree, whether resident or non-resident, are required to announce to the Faculty, through the President, as early as the fifteenth of October of each year, the particular branches of study to which they wish to give special attention. The supervision of their work will then be entrusted to the proper committee.

2. The subject of the thesis must be announced to the President as early as the first of December of the college year in which the applicant expects to take the degree.

3. It is required in the case of a resident applicant that, so far as the resources of the University permit, the thesis be upon a subject requiring research. The thesis of a non-resident applicant must also be upon a subject requiring independent research, if possible.

4. The thesis must be completed and put into the hands of the chairman of the proper committee as early as the first of May of the year in which the applicant expects to take the degree.

5. The thesis must be prepared for close scrutiny with reference not only to its technical merits, but also to its merits as a specimen of literary workmanship. It must be preceded by an Analytical Table of Contents, and a carefully prepared account of the authorities made use of.

6. The thesis must be read and defended in public at such time as the Faculty may appoint; and, in case of a Master's degree, a bound copy, either written or printed, must be deposited in the University library.

7. Candidates for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Letters, in case of the acceptance of their theses, are also required to have the accepted theses printed, and to present twenty-five copies of the same to the University library, unless by special vote of the Faculty a smaller number is deemed sufficient.

FURTHER DESCRIPTION OF COURSES IN TECHNOLOGICAL AND PROFESSIONAL STUDIES.

Although the University has no School of Technology, as a separate organization, instruction is given in the branches pursued in such a school. Accordingly, fuller statements than are given above concerning the technological courses, are here added; and also statements of special interest to those who desire to pursue extended studies in the physical and biological sciences, in chemistry, and in geology, or to prepare themselves for the profession of teaching. The pharmaceutical courses are described in the chapter on the School of Pharmacy.

I. ENGINEERING.

The University offers to persons that wish to become professional engineers, thorough courses of study extending over about four years. In these courses of study, the aim of the University is to lay a foundation of sound theory, sufficiently broad and deep to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession; and at the same time to impart such a knowledge of the usual professional practice, as shall make its students useful in any position to which they may be called. While the adaptation of theory to practice can be thoroughly learned only by experience, there are many matters in which the routine work of an engineering field party, office, or drafting room can be carried out on a greater or less scale in a training school.

In *Civil Engineering* all the technical branches are under the direct care of those who have had professional experience as well as a full scientific training, and in all particulars the course embodies as close an imitation of the requirements of active labor as the instructors who have the several branches in charge can devise.

In *Mechanical Engineering* the course of study, though to some extent parallel with that in civil engineering, includes a wide range of special studies. Prominence is given to the study of steam engineering, and in this branch a large amount of practical work is done. The instruction is arranged to accommodate those who wish to devote their time principally to mechanical engineering proper, to steam engineering, or to marine engineering and naval architecture.

In *Mining Engineering and Metallurgy* the course of instruction, which is intended to cover about four years of study, includes a part of that provided for students in civil and in mechanical engineering, though more especial attention is paid in the latter part of the course to mineralogy, geology, and chemistry. The instruction in the technical branches is arranged so as to meet the wants, both of those whose purpose it is to confine their professional work more closely to metallurgy, and of those who intend to engage in the practice of mining and metallurgy combined.

In *Electrical Engineering* the first three years of the course are nearly the same as in mechanical engineering. Besides the preliminary work in mathematics, language, drawing, and physics, instruction is given in pattern making, metal work, forging, and foundry work; and enough of the study of steam engines and other prime movers is included to meet the needs of the professional electrical engineer.

REQUIREMENTS FOR ADMISSION.

Candidates for a degree in any of the courses in engineering will be examined in the following subjects:

1. ENGLISH LANGUAGE.—The same as for the degree of Bachelor of Arts (see page 34).

2. MATHEMATICS.—*Algebra and Geometry*.—The same as for the degree of Bachelor of Arts (see page 35).

Trigonometry.—Plane Trigonometry as given in Olney's Elements of Trigonometry. A candidate who has had no opportunity for preparation in Trigonometry may be admitted, if satisfactory examinations are passed in the other subjects, but he will be required to make up the deficiency by extra work in the University classes in that subject.

3. HISTORY.—The same as for the Course in General Science (see page 36).

4. NATURAL PHILOSOPHY.—The same as for the degree of Bachelor of Arts (see page 35).

5. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 39).

6. CHEMISTRY, GEOLOGY, ZOOLOGY, PHYSIOLOGY, AND ASTRONOMY.—In any two of these subjects (see page 37).

Students not candidates for a degree may be admitted to pursue such studies as they prefer, provided they are found prepared to join the classes in these studies. They will be expected to attend all the lectures, recitations, and examinations in the branches prescribed for the regular students, and will be required to take enough work to occupy them profitably.

COURSES OF INSTRUCTION.

The studies pursued in the earlier part of the course, common to all students of engineering, comprise, in *Mathematics*, algebra, geometry, plane and spherical trigonometry, analytic geometry, and the elements of differential and integral calculus; in *French and German*, an amount covering in all about two years of study; in *English*, a course in higher English grammar and composition; in *Physics* and *Chemistry*, the study of the elementary principles; and in *Drawing*, practice in geometrical and in mechanical drawing, and in the study of descriptive geometry.

The more technical subjects are taken up in the latter part of the course. Some of these subjects are of equal value to all classes of engineering students, such as analytical and applied mechanics, the strength and resistance of materials, and the metallurgy of the useful metals, especially iron and steel; others are adapted more particularly to the wants of the special stu-

dents in the several courses. Their general scope may be seen from the following descriptive outline.

1. *Drawing*.—A very complete course in mechanical drawing is given, embracing plane projection drawing, isometric drawing, descriptive geometry, and the elementary principles of coloring and shading, with original problems executed in the drawing room. Examples from numerical data are always given in all branches, and copying from the flat is avoided. Students of mechanical engineering are required to sketch pieces of machinery, and afterwards to make working drawings suitable for use in the shop. Problems peculiar to mining practice are also given. The plans of surveys, plane-table work, maps, designs in engineering construction, and the thesis drawings naturally come under this head. Instruction is also given in free-hand drawing, topographical drawing, ornamentation and lettering, shades and shadows, linear perspective, and drawing for stone cutting. The work in drawing occupies the student a part of almost every day throughout the course.

2. *Surveying*.—The work in surveying combines theory and practice. A course of lectures and text-book work, in daily exercises, covers so much of one year as is not given to field work; the theory of instruments, and all the operations of surveying, laying out work, and computing, are explained in detail. Every student is afforded abundant opportunity for becoming familiar, by actual use, with the excellent and full assortment of instruments owned by the University, embracing those usually employed in actual work, and numbering enough to equip well the parties. The classes in surveying are drilled in all the field-work that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide areas, and solve problems in heights and distances from data taken by themselves. They also determine the meridian, and take observations for latitude. This work is done during the fall months; the finished plans of the surveys are made during the winter.

The classes in railroad engineering have practice in running levels and curves of different kinds, and in the measurement of earth-work. In the month of June they are taken into the field as a railroad party, for a space of four weeks continuously,

where, under competent supervision, they go through all the field work for a projected line; doing all the work up to the point of actual construction, such as reconnoissance, preliminary and location survey, cross-sectioning, staking out, contouring, and topography. A plan and profile, carefully made in the field by the students from the notes of the party, complete this portion of the subject, and serve to fix the practical application of the principles obtained from the text-books and lectures. In the above work are usually included a plane-table survey, triangulation, and some hydrography when the selected locality is favorable.

The principal text-books used in this work are Johnson's Surveying, Searle's Field-Book for Engineers, and Rankine's Civil Engineering.

3. *Strength and Resistance of Materials*.—A course of recitations and lectures continuing through the first half year is devoted to this subject, and is attended by all the engineering students. The action of the different materials under applied forces, the distribution of stress, and the proper proportions to be given to the different parts of structures in order that they may safely fulfil their several functions, are carefully studied.

4. *Theory of Structures*.—Roof and bridge trusses, in wood and iron, arches, in wood, iron, and stone, trestles, brick and stone masonry, foundations, tunnels, and, in general, the whole theory of structures are discussed. In this course, as in the preceding (3), Rankine's Civil Engineering is used as a text-book supplemented by full explanations, additional notes, lectures, examples, and problems.

A complete course of instruction is also given in the graphical analysis of roof and bridge trusses and arches, as recently developed and applied. The student is made familiar with both the analytical and graphical methods of treatment, and thus possesses ready proof of the accuracy of his calculations.

5. *Hydraulics*.—The law of the flow of water through orifices and pipes and over weirs, the gauging of streams and rivers, the designing of works for water supply, drainage and sewerage, the laying out of canals, and the subjects of river and harbor improvements are treated in this course.

6. *Machinery, Prime Movers, and Millwork.*—A course of instruction is given in mechanism, or the general principles of machinery, involving the study of gearing, screws, cranks, and levers, and the dynamics of machinery. In the study of prime movers, special attention is given to turbine and other water motors, and to steam engines. In the theory of machine construction, problems involving the strength and design of machines, and the materials used in their construction are studied at length, in connection with such examples as illustrate the best practice. The instruction in millwork covers the distribution of power and the arrangement of shafting and machinery in manufacturing establishments. Practical problems involving the strength of shafting, belting, and gearing, are fully treated. Tests are made to determine the efficiency of machines, and the value of lubricants.

7. *Designs in Engineering and in Machine Construction.*—Contemporaneously with the study of theory students are required to work out problems in design. They are furnished with the usual data for a design, and the kind or type of structure or machine is indicated. They are then expected to make the necessary calculations, paying particular attention to proportioning the different parts so as to secure strength, simplicity, and effect, and to present, at a specified date, complete working drawings, giving full details, accompanied by bills of materials, estimates, and specifications.

8. A course in *Thermodynamics* embraces the study of the principles governing the action of heat engines in general, hot-air and gas engines, air compressors, compressed-air engines, and refrigerating apparatus.

9. *Steam Engineering.*—The work in this branch covers the practical use of steam. Furnaces and boilers are studied with reference to proper combustion of fuel, to securing maximum evaporative efficiency, and to proportioning the parts for strength, durability, and accessibility for cleaning and repairs. The care and management of engines and boilers, both in use and out of use, are fully considered. A study is made of the principal steam pumps and pumping engines. The practical application of steam to heating and ventilating purposes is treated by lectures, and

by inspection of actual plants. Tests are made to determine the value of fuels, quality of steam, and the efficiency of furnaces, boilers, and engines.

10. *Laboratory Work*.—The laboratory work embraces experimental courses in the mechanical laboratory, and the practical courses in the various work-shops. Instruction is given in the principles governing the action of cutting tools and the principal machines and hand tools used in the shop. Lectures are given on pattern making, moulding, and founding, covering the principal features of each.

The *Shop Practice* covers the application of principles previously studied. It comprises the actual manipulation of the tools used in working metal and wood, and in moulding. The student is required to do work in pattern making, and moulding in green sand, in dry sand, and in loam, and will charge and have the management of the cupola and brass furnace during the operations of casting. Careful attention is given to the operations of founding and to making composition metals for specific purposes. The student is also required to put in practice, at the blacksmith's forge, his knowledge of the elementary principles of forging, and to forge and temper his own cutting tools. By working with iron and steel of different qualities the student becomes familiar with all grades of those materials. Practice is also afforded in soldering, brazing, and steam-fitting.

11. *Marine Engineering and Naval Architecture*.—The instruction in this branch comprises the study of marine steam engines and propelling instruments, the hydraulics of ship-building, buoyancy, metacentre, stability and trim, weight and centre of gravity, waves and rolling, structural strength, speed and resistance, propulsion by sails and steam engines, laying-off and taking-off, and other topics.

12. *Economic Geology*.—Particular attention is paid to the geology of mines and mineral districts, and to the modes of occurrence and distribution of mineral substances that have an economic or commercial importance.

13. *Mining*.—In this branch the instruction is given mainly by lectures. The machines in use at the best mines are described, and the mutual relations of parts explained and illus-

trated with the aid of plates and diagrams. The different operations connected with the discovery, opening, development, and working of mines are all studied in their proper order.

14. *Metallurgy*.—A complete course of instruction by lectures and recitations is given upon the subjects of fuel, refractory material, iron and steel, copper, zinc, lead, gold, silver, and other metals, extending over an entire year. The lectures are illustrated by charts and drawings of furnaces and appliances used, and by samples of furnace products. In connection with this course of study, the student is required to work out problems in heat, furnace construction, ore mixtures, blast-furnace slags, and blast engines, and to write out the chemical reactions that take place in the different metallurgical operations. Certain days are devoted to laboratory work, and the student is required to determine by actual tests the heating value of different fuels, to make tests of fire-proof material, and, from data and material furnished, to produce slags whose composition shall correspond to a given formula.

15. *Electrical Engineering*.—The special electrical courses, additional to the elementary study of the subject, are devoted to primary and secondary generators, electro-metallurgy, electrical units and methods of measurement, dynamo-electric machinery, arc and glow lamps, photometry, and the distribution of electricity and transmission of power. In addition, elective courses in mathematical electricity are offered.

The laboratory work in electricity is devoted mainly to the investigation of primary and secondary batteries, to practice in making electrical measurements of precision by all the best methods, to setting up and testing dynamos, motors, and storage batteries for efficiency, to photometry of both arc and glow lamps, and to special investigations connected with the preparation of a thesis.

16. *Visits of Inspection*.—As often as may be practicable, visits are paid to neighboring manufacturing establishments, and to electric-light and electric-power stations, for the purpose of acquiring a knowledge of the methods employed in building, in the construction of bridges, machinery, and ships, and

the best practice in electrical manufacturing and engineering on a large scale.

FACILITIES FOR INSTRUCTION.

The collections for illustrating the instruction given comprise models, drawings, photographs, lithographs, and blue prints, representing trusses, arches, and details of construction in iron, wood, and stone; also shapes of iron, working models of turbines and engines, and working drawings of a number of bridges. These collections are receiving additions from year to year, by gift and purchase, and are invaluable to the student.

Tests of engines and boilers, and of machinery in general, will be made on request, and the profits of such work devoted to extending the facilities of the engineering laboratory. The data of all experiments and tests made are kept in the laboratory records.

All of the laboratory work is on a practical basis, and is done as nearly as possible as it would be done in any well arranged manufacturing establishment. There is also a large and convenient metallurgical laboratory connected with the chemical laboratory, amply supplied with assay furnaces and other appliances such as are usually found in laboratories of this description. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all; and frequent references are made to them in the class-room as the various subjects are brought forward.

EXAMINATIONS.

Examinations, usually in writing, are held at the end of each semester, but the classes are liable to be examined at any time, without notice, on any portion of their previous work.

REQUIREMENTS FOR GRADUATION.

Upon the completion of a prescribed course of study, amounting to twenty-five Full Courses,* as given below, and the presentation of a satisfactory thesis, the student receives the de-

* For explanation of the term Full Course, see page 74; and for further information in regard to the Courses prescribed for graduation see pages 43 to 73.

gree of Bachelor of Science. The diploma given indicates the line of study pursued.

Bachelors of Arts, of Philosophy, of Science, and of Letters, of this University, and graduates of any other reputable college, are recommended for the same degree with the regular students, after attendance on, and a satisfactory examination in, the technical subjects alone of the several courses. These studies can be completed in two years. The culture imparted by classical or other liberal training will be found to have its uses for one engaged in engineering work, and the previous discipline of the faculties in exact research will enable the professional student to master more easily the requirements of the course. All the time the student can devote to general studies before taking up specialties will be well spent.

The requirements for the several degrees are as follows:

1. *In Civil Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Civil Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German; four Full Courses, to be selected by the student from all the Courses open to him in these two languages. (See pages 47 and 50).

In English; Course 1.

In Mathematics; Courses 1, 2, 3, 4, 5, 6.

In Physics; Course 1.

In General Chemistry; Course 1.

In Mineralogy; Course 1.

In Astronomy; Course 4.

In Drawing; Courses 1, 2, 4, 5, 6, 14.

In Surveying; Courses 1, 2, 3.

In Civil Engineering; Courses 1, 2, 3, 4, 5, 6, 7, 8, 9.

In Mechanical Engineering; Course 8.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

2. *In Mechanical Engineering.*

To obtain the recommendation of the Faculty for the degree

of Bachelor of Science, for a course in Mechanical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German; four Full Courses, to be selected by the student from all the Courses open to him in these two languages. (See pages 47 and 50).

In English; Course 1.

In Mathematics; Courses 1, 2, 3, 4, 5, 6.

In Physics; Courses 1, 2.

In Analytical Chemistry; Course 3.

In Mineralogy; Course 1.

In Drawing; Courses 1, 5, 6, 9.

In Surveying; Course 4.

In Civil Engineering; Courses 3, 5, 9.

In Mechanical Engineering; Courses 1a, 2, 3a, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

3. In Mining Engineering.

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mining Engineering, the student must complete one of the two following sets of requirements:

I.

(Mining.)

In French and German; four Full Courses, to be selected by the student from all the Courses open to him in these two languages. (See pages 47 and 50.)

In English; Course 1.

In Mathematics; Courses 1, 2, 3, 4, 5, 6.

In Physics; Course 1.

In General Chemistry; Course 1.

In Analytical Chemistry; Courses 1, 4, 8, 9.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Surveying; Course 1.

In Civil Engineering; Courses 1, 2, 3, 5.

In Mechanical Engineering; Course 8.

In Mining Engineering; Course 1.

In Metallurgy; Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

II.

(Metallurgy.)

In French and German; four Full Courses, to be selected by the student from all the Courses open to him in these two languages. (See pages 47 and 50).

In English; Course 1.

In Mathematics; Courses 1a, 2.

In Physics; Course 1.

In General Chemistry; Course 1.

In Analytical Chemistry; Courses 1, 4, 6, 7, 8, 9.

In Mineralogy; Course 2.

In Geology; Courses 8, 9.

In Drawing; Courses 1, 5.

In Mechanical Engineering; Courses 1a, 2, 3a.

In Mining Engineering; Course 1.

In Metallurgy; Courses 1, 2.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

4. In Electrical Engineering.

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Electrical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German; four Full Courses, to be selected by the student from all the Courses open to him in these two languages. (See pages 47 and 50).

In English; Course 1.

In Mathematics; Courses 1, 2, 3, 4, 5.

In Physics; Courses 1, 2, 3a, 4, 5a, 8a, 9.

In General Chemistry; Course 1: or in Analytical Chemistry; Course 3.

In Drawing; Courses 1, 5, 6, 9.

In Civil Engineering; Course 5.

In Mechanical Engineering; Courses 1a, 2, 3a, 4, 5, 7, 8.

From the other Courses offered the student must choose and

complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

REQUIREMENTS FOR THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER, MINING ENGINEER, AND ELECTRICAL ENGINEER.

The conditions on which the degree of Civil Engineer, as a second degree, is conferred, are as follows:

The degree of Civil Engineer may be conferred upon Bachelors of Science of this University, who have taken the degree for a course in civil engineering, if they furnish satisfactory evidence that they have pursued further technical studies for at least one year, and, in addition, have been engaged in professional work, in positions of responsibility, for another year. The first of the above requirements may be satisfied by pursuing at the University, under the direction of the Faculty, a prescribed course of study for an amount of time, not necessarily consecutive, equivalent to a college year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor of civil engineering, and he must prepare a satisfactory thesis on some engineering topic, to be presented, together with a detailed account of his professional work, one month, at least, before the date of the annual Commencement at which he expects to receive the degree.

The conditions on which the degrees of Mechanical Engineer, Mining Engineer, and Electrical Engineer, as second degrees, are conferred upon Bachelors of Science of this University who have taken the degree for a course in mechanical engineering, in mining engineering, or in electrical engineering, are analogous in character and in amount to those given above for the degree of Civil Engineer.

II. THE PROFESSIONAL STUDY OF CHEMISTRY.

A course of training is provided, extending through four college years, giving a practical preparation for the pursuit of an analytical and consulting chemist. The work is also adapted to the purpose of teaching, or research in chemical science.

After devoting one year mainly to the French and German languages as a basis for their use in scientific literature, and to mathematics as a support for physics and chemistry, the student enters directly upon laboratory practice in analytical chemistry, which extends through the remainder of the course. Qualitative analysis begins with the second year, and quantitative analysis is reached in the second semester of this year. Organic chemistry begins with the third year, in the first semester of which a study of chemical philosophy is taken. Laboratory physics may be taken in the third year. The larger part of the fourth year is devoted to original research, both experimental and literary. Manufacturing chemistry is given in that year.

Candidates for the degree of Bachelor of Science in Chemistry are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 36).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Chemistry, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

- In French; (a), for those who entered *without* French, Courses, 1, 2, 4; or (b), for those who entered *with* French, Course 4.
- In German; (a), for those who entered *without* German, one and three-fifths Full Courses, including Course 1 and one option in Course 2; or (b), for those who entered *with* German, one Full Course, taken from options in Courses 3, 4.
- In English; Course 1.
- In Mathematics; Courses 1a, 2.
- In Drawing; Course 3 or Course 4.
- In Geology; Courses 1, 9.
- In Physics; Course 1.
- In General Chemistry; Courses 1, 4.
- In Analytical and Organic Chemistry; Courses 1, 2, 4, 5, 8, 10, 11, 17.
- In Mineralogy; Course 2.
- In Chemistry; additional, three Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*. Among

his elective studies he is recommended to take (a) Course 1 in Botany, (b) Course 3 in Physics, or (c) Course 1 in Metallurgy and Course 9 in Analytical Chemistry.

A Register of graduates and other former students engaged in practical chemistry or as teachers of chemistry has been published, and copies can be obtained by addressing the Director of the Chemical Laboratory.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY.

This course of study has been provided for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research.

In the first year, modern languages and mathematics, and in the second year, elementary physics and chemistry are required, as being absolutely essential to the successful prosecution of an extended course in science. Zoology, botany, and physiology are the most prominent subjects of the course, but full opportunity is given for extended work in physics, chemistry, palæontology, and other sciences. The laboratories of the University are provided with the necessary facilities not only for ordinary biological work, but for somewhat extended research, and every encouragement is given to students, especially in the last year, to devote themselves to original investigations.

Candidates for the degree of Bachelor of Science in Biology are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 36).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Biology, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

- In French; (a), for those who entered *without* French, one and three-fifths Full Courses;
or (b), for those who entered *with* French, a four-fifths Course;
In German; (a), for those who entered *without* German, one and three-fifths Full Courses;

or (b), for those who entered *with* German, a four-fifths Course.

In English; Course 1.

In Philosophy; Course 1 or Course 2.

In Mathematics; Courses 1a, 2.

In Physics; Course 1.

In General Chemistry; Course 1.

In General Biology; Courses 1, 2.

In Biological work; additional, five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

Candidates for the degree of Bachelor of Science in Biology, are strongly recommended to devote as much time as practicable in the early part of their course to the modern languages, mathematics, and the physical sciences. It is expected that they will arrange their work, not only in Biology, but in other subjects, in accordance with a definite plan fixed after conference with the instructors in charge.

IV. SUGGESTIONS TO STUDENTS PURSUING SPECIAL STUDIES IN SCIENCE.

Students who desire to pursue a special line of study in any of the physical sciences or in geology will observe the importance of taking the elementary Courses early enough to enable them to follow the proper consecutive order in the studies desired. The following schedules of studies in Physics, in Astronomy, and in Chemistry, are given as guides to candidates for any of the Bachelors' degrees, who wish to pay special attention to those branches of science. The schedule of studies in Geology is somewhat fuller, and is recommended to candidates for the degree of Bachelor of Science, who desire an education which shall be specially geological.

A. PHYSICS.

First Year. Mathematics 1 or 1a, 2; Drawing 1, 4, 9.

Second Year. Mathematics 3 or 3a, 4 or 4a; Physics 1, 2, 3; General Chemistry 1; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 5 with Mathematics 6 and Mechanical Engineering 7, or Analytical Chemistry 1; Philosophy 1; Physics 12; General Chemistry 3; Astronomy 1, 3; Mineralogy 1 or 2.

Fourth Year. Philosophy 2; Physics 12 (unless previously taken);

General Chemistry 4; Mechanical Engineering 1, 2, or 4; and, if the student has time for them, Mathematics or Quantitative Analysis; Botany 1.

B. ASTRONOMY.

First Year. Mathematics 1 or 1a, 2; Drawing 1, 4, 9.

Second Year. Mathematics 3 or 3a, 4 or 4a; Physics 1, 2; General Chemistry 1; Drawing 1, 4, 9 (unless previously taken).

Third Year. Mathematics 5, 6; Philosophy 1; General Chemistry 3; Astronomy 1, 2, 3, 5; Mineralogy 1.

Fourth Year. Philosophy 2; Astronomy 6, 7, 8; Mechanical Engineering 1, 2, or 4.

C. CHEMISTRY.

First Year. Mathematics 1 or 1a, 2; Geology 1; Drawing 1, 4, 9 (if the student has time for them).

Second Year. Physics 1, 2, 3; General Chemistry 1; Drawing 1, 4, 9 (unless previously taken); Mathematics 3 or 3a, 4 or 4a, and General Chemistry 3 (if the student has time for them).

Third Year. Philosophy 1; General Chemistry 3 (unless previously taken); Analytical Chemistry 1, 4, 10; Mineralogy 2.

Fourth Year. General Chemistry 4; General Chemistry 5 with Analytical Chemistry 5, 9, 17, 18, or Analytical Chemistry 12, 17 and Hygiene and Physiological Chemistry 2, 3; Botany 1; Philosophy 2 and Mechanical Engineering 1, 2, or 4 (if the student has time for them).

D. GEOLOGY.

First Year. Mathematics 1 or 1a, 2; French 1, 2, or French 4 and German 1, 2 (whichever the student is qualified to pursue); English 1; Geology 1, 2; General Biology 1; Zoology 1; and, if practicable, a Course in Scientific Nomenclature.

Second Year. French 4 (if not previously taken); German; Physics 1, 2; General Chemistry 1; Geology 3, 5, 6, 7; Drawing 4, 7.

Third Year. English 2; Philosophy 1, 2; Analytical Chemistry 1; Mineralogy 2; Geology 4. It is also recommended that electives be chosen from the following: Mathematics 3 or 3a, 4 or 4a; Analytical Chemistry 8; Astronomy 1; Geology 7.

Fourth Year. Geology 4 continued as 4a, 7 continued as 7a, 8; Drawing 2; Metallurgy 1, 2. It is also recommended that electives be chosen from the following: Mathematics 6; Astronomy 3; and advanced Courses in Mineralogy and Lithology, Geology and Palæontology, Zoology, Physiology.

V. THE SCIENCE AND THE ART OF TEACHING.

The aims of the University in providing instruction in the Science and the Art of Teaching, are:

1. To fit University students for the higher positions in the public school service.

It is a natural function of the University, as the head of our system of public instruction, to supply the demand made upon it for furnishing the larger public schools with superintendents, principals, and assistants. Year by year these important positions are falling more and more into the hands of men that have received their education in the University. Till recently, the training given to our graduates has been almost purely literary; it has lacked the professional character that can alone give special fitness for the successful management of schools and school systems. Now, however, the University offers students that wish to become teachers ample facilities for professional study.

2. To promote the study of educational science.

The establishment of a chair of teaching is a recognition of the truth that the art of education has its correlative science; and that the processes of the school room can become rational only by developing and teaching the principles that underlie these processes. Systems of public instructions are everywhere on trial, and the final criteria by which they are to stand or fall must be found in a philosophical study of the educating art.

3. To teach the history of education, and of educational systems and doctrines.

The supreme right of the school is to grow; and much hurtful interference might be avoided by ascertaining the direction of educational progress and the history of educational thought.

4. To secure to teaching the rights, prerogatives, and advantages of a profession.

5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

THE TEACHER'S DIPLOMA.

The Teacher's Diploma will be given to resident graduates and to students of the University at the time of receiving a Bachelor's or a Master's degree, provided the candidate has completed three Courses of study offered by the professor of the science and the art of teaching, viz., Courses 1 and 2, and some three-hour Course, and, also, at least one of the Teachers' Courses offered by other professors, and by special examination has shown such marked proficiency in the Course chosen as qualifies him to give instruction.

RULES AND REGULATIONS OF THE DEPARTMENT.

I. ADMISSION CONDITIONS.

All students are regarded as strictly on probation until they have removed all conditions incurred in the examinations for admission to the University. All such conditions must be removed during the year following the date of the examination. Students who have any admission conditions outstanding at the beginning of their second year of residence will not be allowed to join their classes until such conditions are removed.

II. ELECTION OF STUDIES.

I. The maximum number of hours a week a student may elect without special permission of the Faculty is the following:

- During the first year, sixteen hours:
- During the second year, eighteen hours:
- During the third year, eighteen hours:
- During the fourth year, twenty hours.

In cases of exceptional proficiency additional hours are granted by the Faculty on especial request; but in all cases requests for permission to take an additional number of hours must be made in writing, and must be deposited in the Registrar's box on or before the *first Monday* of the semester during which the additional work is desired.

N. B. Students who are making up preparatory studies in the Ann Arbor High School are required to deduct the time spent in that school from the maximum number of hours allowed them in the University.

II. In their first year, students are recommended to make their elections in accordance with the following schemes. In cases where, for good reasons, it is not practicable to elect sixteen hours a week, a smaller number (fifteen, or fourteen) may be chosen.

1. For candidates for the degree of Bachelor of Arts:

First Semester: Greek, four hours; Latin, three hours; Mathematics, three hours; French, four hours; English, two hours.

Second Semester: Greek, four hours; Latin, four hours; Mathematics, four hours; French, four hours.

2. For candidates for the degree of Bachelor of Philosophy:

First Semester: Latin, three hours; Mathematics, three hours; French and German, eight hours; English, two hours.

Second Semester: Latin, four hours; Mathematics, four hours; French and German, eight hours.

3. For candidates for the degree of Bachelor of Letters:

First Semester: Mathematics, three hours; French, four hours; German, four hours; History, or other studies, five hours.

Second Semester: French, four hours; German, four hours; English, two hours; History, or other studies, six hours.

4. For candidates for the degree of Bachelor of Science (in General Science):

First Semester: Mathematics, three hours; French and German, eight hours; other studies, five hours.

Second Semester: Mathematics, four hours; French and German, eight hours; English, two hours; other studies, two hours.

5. For Candidates for the degree of Bachelor of Science (in Chemistry and in Biology):

The same as for the course in General Science.

6. For Candidates for the degree of Bachelor of Science (in Engineering):

a. In Civil Engineering:

First Semester: Mathematics, four hours; Mineralogy, two hours; Drawing, four hours; French, German, or other studies, six hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German or other studies, seven hours.

b. In Mechanical Engineering:

First Semester: Mathematics, four hours; Drawing, two hours; Mechanical Engineering, five hours; French, German, or other studies, five hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German, Chemistry, or other studies, seven hours.

c. In Mining Engineering:

First Semester: Mathematics, three or four hours; Drawing, two or three hours; French, German, or other studies, sufficient to make a total of sixteen hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German, or other studies, seven hours.

d. In Electrical Engineering:

The same as for the course in Mechanical Engineering.

III. Except as provided in (I) and (II) each student may elect his studies and may pursue them in any order he may choose, subject only to the following restrictions:

(a) Before entering on any study the student must give the Professor in charge satisfactory evidence that he is prepared to pursue it with advantage.

(b) If he is a candidate for a degree, he must at some time take all the studies "prescribed" for the degree he seeks.

(c) No student will be allowed to elect merely a part of a Course without special permission of the Faculty.

(d) No credit will be allowed to a student for work in any Course, unless the election of the work is formally made and reported to the Registrar before the work is begun.

(e) After the second Monday of each semester no study can be taken up or dropped without special permission of the Faculty.

(f) The Faculty will require a student to drop a part of his work at any time, if in their opinion he is undertaking too much; or to take additional work, if they think he is not sufficiently employed.

(g) The Faculty reserve the right to withdraw the offer of any study not chosen by at least six persons.

IV. After matriculation, a student cannot, without special permission of the Faculty, be admitted to examination in any one of the Courses given, until he has received in the University the regular instruction in such Course.

V. The student is urged to make his choice of studies with care, and with reference to some plan. The members of the Faculty will be ready to give advice and assistance in this regard.

III. EXAMINATIONS.

1. All students of this Department, whether candidates for a degree or not, if at work upon the credit system, are required to attend all the examinations in the Courses of study they pursue.

2. No student absent from any regular examination in any Course of study that he may have pursued, will be allowed to take such omitted examination before the next regular examination in that Course. In cases of great urgency, however, the Faculty may grant students special permission to be examined at an earlier date.

3. No student whose examination in any Course is reported as "*Incomplete*," will receive credit for that Course until after the examination has been completed. In case, however, the examination be not completed within one year, the unfinished Course will be regarded and treated as "*Not Passed*."

4. Any student reported as passed "*Conditionally*" in any Course, must remove the condition within one year from the date of the examination in which it was incurred; otherwise, the Course passed conditionally will be regarded and treated as "*Not Passed*."

5. Any student reported as "*Not Passed*" in any Course, will receive no credit for that Course until he has again pursued it as a regular class exercise and has passed the regular examination in the same.

6. Any student detected in the use of illegitimate help at any examination, will be regarded as an *Absentee* from that examination, and will be treated as such.

IV. RELATION TO OTHER DEPARTMENTS.

1. Candidates for a degree in this Department of the University, who wish to pursue studies in any other Department, may be granted that privilege, provided they lack no more than three Full Courses for graduation, and distribute their work in this Department as evenly as possible throughout the year.

2. All students admitted from other Departments of the University to the privileges of this Department are regarded in the class-room as members of this Department, and are required

to pass the regular examinations with the classes in which they are enrolled. Violations of this requirement will be deemed a forfeiture of the privileges of this Department; but this rule is not to be interpreted as applying to those who are permitted to attend lectures or other exercises without being enrolled.

V. ATTENDANCE AND DISCIPLINE.

The State of Michigan extends the privileges of the University without charge for tuition, to all persons of either sex, who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission of the President.

Such delinquencies as tardiness, absence, deficiencies, and offenses against good order, in the several departments of instruction, are ordinarily dealt with by the instructor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed, whenever in the opinion of the Faculty they are pursuing a course of conduct seriously detrimental to themselves or to the University.

The following is a By-Law of the Regents:

"Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfil, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time he shall be dismissed."

FEES AND EXPENSES.

For information in regard to fees and expenses, see pages 29 to 31.

THE ELISHA JONES CLASSICAL FELLOWSHIP.

In April, 1889, the Elisha Jones Classical Fellowship was established by Mrs. Catherine E. Jones, in memory of her husband, Professor Elisha Jones, a graduate of this University in the Class of 1859, and for many years a member of the Faculty of the Department of Literature, Science, and the Arts.

The following extracts from the deed of gift and the covenant with the Board of Regents may serve to explain the purpose of the Fellowship, and the conditions on which it is awarded.

"I, Catharine E. Jones, * * * do hereby promise and covenant to and with the Board of Regents of the University of Michigan, that I will establish in connection with said University a Fellowship in memory of my husband, Elisha Jones,—said Fellowship to be designated and known as the Elisha Jones Classical Fellowship,—it being my earnest purpose to encourage, in my husband's name and memory, as far as lies in my power, patient, honest, accurate study of the languages, literatures, and archæology of Ancient Greece and Rome; and that for the purpose of establishing and sustaining said Fellowship I do hereby pledge myself and my estate to the amount of ten thousand dollars as the principal sum of the endowment, * * * interest, and that only, to be * * used * * in support of said Fellowship * * * .

"There shall be a Board of Examiners * * * consisting of the President of the University, the senior Professor of Greek, the senior Professor of Latin, and two other full professors of the academic faculty, chosen by the above named appointees. * * * The said Board of Examiners shall appoint candidates to the Elisha Jones Classical Fellowship according to the following conditions:—

"(1) The candidate must have resided at the University of Michigan as a student in the Academic Department at least three entire semesters prior to the appointment; must have made distinguished proficiency in the Greek and Latin languages—such proficiency to be ascertained by tests agreed upon by the examining board; must be a Bachelor of Arts of not more than two years' standing, and must possess an unexceptionable moral character.

"(2) The holder of said Fellowship must make the Greek and Latin languages and literatures the special subjects of study during his, or her, incumbency, adding thereto such other branches of study as may be chosen by the incumbent and approved by the examining board.

"(3) The period of incumbency shall be limited to two academic years, but the incumbent may be removed by the examining board at any time during this period, if said board shall find in his or her conduct or scholarship good and sufficient ground for such removal; and therefore the incumbent shall at all times be liable to be called upon by the board for examination or inquiry as to habits of life and study.

"(4) The two years of incumbency shall be spent at the University of Michigan, unless at any time the examining board shall see fit to allow the second year to be spent by the holder of the Fellowship at Athens, or at Rome, or at some other place deemed by the board equally favorable to classical study, in the systematic study of classical philology and literature.

* * * * *

"Of the candidates fulfilling the requirements specified * * * the one best

qualified in the judgment of the examining board * * * shall receive * * * a certificate of appointment * * * which shall entitle the holder thereof to be paid one-half the annual stipend of said Fellowship, to wit, two hundred and fifty dollars, * * * and thereafter on the first day of each semester the incumbent shall be entitled to receive another installment of the same amount as the first * * * .

* * * * *

"Furthermore, when the annual income of said endowment shall exceed five hundred dollars, whatever excess there may be shall remain in the hands of the Regents and be added to the permanent endowment fund; and when the principal sum shall furnish the income for a second fellowship of the same amount per annum as the first, a second fellowship shall be established, bearing the same name, organized on the same basis, and with the same conditions and control as the first fellowship already provided. In the event of the income * * * exceeding the amount necessary to support the two fellowships above mentioned, the surplus, shall, at the discretion of the Board of Regents, either be added to the principal sum * * * or used to increase the semi-annual stipends of the two fellowships; and if in the judgment of the Board of Regents the principal shall at any time have so increased as to justify, and provide for, the establishment of other fellowships, they shall be established, bearing the same name, organized on the same basis, and with the same conditions and control as the two fellowships above mentioned."

The Board of Examiners provided for in the covenant quoted above consists for the present of President ANGELL, Professor D'OUGE, Professor KELSEY (in place of Professor FRIEZE, deceased), Professor WALTER, and Professor HUDSON.

The first incumbent of the Fellowship is Herbert Fletcher De Cou, A. B., Class of 1888.

DEPARTMENT
OF
Medicine and Surgery.

The Department of Medicine and Surgery was the first professional school established in the University. Provision was made for it in the legislative act by which the University was organized in 1837, and it was opened for students in 1850. It is distinct in its organization from every other department of the University, and its professors are not required to take any part in conducting the examinations of other students, in recommending them for graduation, or in signing their certificates or diplomas.

The college year begins October 1st, and continues till the last part of June. There is a recess of three days at Thanksgiving, a vacation of two weeks at the Christmas holidays, and a recess of one week in the month of April. The lectures continue till June 15th. The examinations are then begun and are concluded in time for the Commencement exercises, which occur on the Thursday following the last Wednesday in June.

EXTENSION OF THE COURSE.

A few years ago the course of instruction in this Department was extended to three full college years of nine months each (from the first of October to the last of June). Notice is now given of a still further extension.

All students entering this Department after July 1st, 1890, will be required to spend four years in professional study, including the time spent in attendance upon lectures, before presenting themselves as candidates for the degree of Doctor of Medicine.

Further particulars relating to the arrangement and distribution of work during the four years will be given in the Annual Announcement of the Department, which will be issued about the middle of July, 1890. Copies of this announcement can be obtained* by addressing Dr. Wm. A. Campbell, Secretary of the Department.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission to the Department of Medicine and Surgery must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character.

Women are admitted, as to all other departments of the University, on the same conditions as men.

Matriculants in a regular course in the Literary Department of the University, graduates of literary colleges of good standing, graduates of the schools approved as diploma schools* in the Literary Department, and of other high schools of equal standing, will be admitted without examination on presentation of proper evidence to the Secretary of the Faculty. For all others the requirements for admission are as follows:

1. Arithmetic.
2. Spelling, Grammar, and the Art of Composition.
3. English Literature; such a knowledge as may be acquired by the study of Shaw's Manual of English Literature, or some similar work.
4. Political and Physical Geography. Any of the advanced Geographies used in the higher schools may be used as text-books.
5. An outline of the history of modern civilized nations, and especially of American history; such as may be found in the Manuals of History used as text-books in high schools.
6. Elementary Zoology, including an acquaintance with the characteristics of the principal divisions of the animal kingdom. Packard's Zoology may be cited as an illustration of a work to be studied.

In addition to the above requirements, *which alone* are insisted upon, students are recommended to acquire such a knowledge of the Latin language as will enable them to read and write correctly current or ordinary prescriptions, and appreciate the

* For a list of the schools approved as qualified to prepare students for admission on diploma in the year 1889, see page 42.

technical language of the natural sciences and of medicine. It is also considered highly desirable that they have a general grammatical acquaintance with the German and French languages. A similar acquaintance with Greek will also be serviceable to the student, and is highly recommended. But a knowledge of these ancient and modern languages is not required for admission.

The examination will be held at 2 p. m., Tuesday, September 30, 1890. Candidates are required to present themselves at this time as they are expected to be in attendance on the first day of the term, when the regular course of instruction begins. To provide for cases in which it is absolutely impossible for the candidates to be present at the time announced, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will, therefore, be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Department of Medicine and Surgery, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere at least one year, may be admitted to advanced standing after having passed a satisfactory examination on all the studies which have already been pursued by the class to which they seek admission.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and each student is expected to occupy during the session the seat selected. But, by courtesy, at the clinical and other practical lectures, members of the graduating class are allowed the privilege of seats nearest the patient and the lecturer.

COURSE OF INSTRUCTION.*

The course of instruction now covers three college years of nine months each. The work of the course is systematically arranged, and so graded that the more elementary branches and the practical courses are first taken by the student, while the more advanced courses and theoretical subjects are presented later in the course, so as to secure an orderly succession of studies.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and some of the lectures and demonstrations, which it is not desirable to present to the two sexes together, are given to them separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various class exercises, it is found that both sexes may attend with propriety at the time.

SCHEDULE OF STUDIES.

The following schedule shows the arrangement of studies as given in 1889-90. A different schedule will go into effect with the beginning of the year 1890-91.

FIRST YEAR.

Subjects completed the first year.	{	Osteology.	} In Upper Lecture Room.
		Embryology, Comparative.	
		Histology and Microscopy.	
		Materia Medica.	} In Lower Lecture Room.
Studies taken the first year and continued through the second year.	{	General Chemistry.	
		Organic Chemistry.	
		Physiological Chemistry.	
		Sanitary Science.	
		Anatomy, Descriptive.	} In Upper Lecture Room.
		Physiology.	

* Beginning with the college year 1890-91, the course will be entirely rearranged. The new arrangement will be given in the Announcement to be issued in July.

Practical work that should be completed the first year.	Practical Histology.	In the Histological Laboratory in sections of twenty. Fifteen lessons of afternoon work, one lesson each week. Two sections yearly, beginning in October and in February.
	Qualitative Chemistry.	In the Chemical Laboratory, requiring twelve weeks of afternoon work. Classes begin the first week in October, the first week in January, and the last week in March.
Practical Anatomy.	Each dissection requires twelve weeks of afternoon work in the Anatomical Laboratory. There are two sections yearly, beginning in October, and in January. Students should complete one dissection in their first year.	

SECOND YEAR.

Subjects completed the second year.	Anatomy, Descriptive and Topographical.	
	Physiology.	
	Therapeutics.	
	Toxicology.	
	Physical Diagnosis.	
Subjects taken the second year and continued through the third year.	Diseases of Children.	
	Medical Jurisprudence.	
Practical work that should be completed the second year.	Theory and Practice of Medicine.	
	Surgery.	
Optional Courses.	Practical Anatomy.	In Anatomical Laboratory.
	Analysis of Urine.	In Chemical Laboratory.
	Practical Physiology.	In Physiological Laboratory.
	Electro-Therapeutics.	In Chemical Laboratory.
	Advanced Histology.	In Histological Laboratory.

THIRD YEAR.

Subjects completed the third year.	Theory and Practice of Medicine.	
	Surgery.	
	Obstetrics and Gynaecology.	
	Pathology.	
	All Special courses, as Ophthalmology, Diseases of the Nervous System, Diseases of Women and Children, Sanitary Science, Minor Surgery, Diseases of the Skin, etc., etc.	
Practical work.	Exercises in Operative Surgery and Obstetrics.	
	Practical Pathology.	In Pathological Laboratory.
	Etiology.	In Hygienic Laboratory.

During the third year the afternoons are largely devoted to attendance upon clinical lectures and work in the University Hospital.

EXAMINATIONS.

Written examinations are held in the middle and at the end of the year. The final examinations in osteology, embryology, physiological chemistry, sanitary science, histology, general chemistry, and organic chemistry are held during the first year. The final examinations in anatomy, physiology, and materia medica are held at the end of the second year; those in practice of medicine, pathology, surgery, obstetrics and gynaecology, and the special subjects, at the end of the third year. The final examinations are conducted, in part at least, in writing.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have been engaged in the study of medicine for the period of three* full years, including the time spent in attendance upon lectures. He must also have passed satisfactory examinations on all the required studies included in the full course of instruction.

In consequence of the prominence given to written examinations through the course, no graduating thesis is required.

FACILITIES FOR INSTRUCTION.

The Department is abundantly supplied with collections of plates, photographs, models, specimens, preparations, apparatus, and instruments, for the purpose of illustrating the different studies embraced in the course. Additions are made from time to time to these collections by special appropriations of the Board of Regents, so that the Faculty are able to adopt every new method of illustration, and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

* For students entering the Department in 1890, the period will be *four* years.

ANATOMY.

The museums of Professors Ford and Sager, embracing several thousand specimens, which are the result of many years' labor in the collection and preparation of materials intended to aid directly in teaching, have now become the property of the University, and are used in the daily work of the class rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, the various changes that occur from infancy to old age, and the processes of first and second dentition; dissections, general and partial, of the vascular, nervous, and muscular systems, both normal and abnormal; models of various portions of the body in wax, papier maché and plaster, illustrating morbid growths, skin diseases, etc.; preparations in the comparative embryology, neurology, and craniology of the vertebrata; human embryology, and anatomy and pathology of the diseases of women, etc. The collections of monstrosities, both single and double, of man and the lower animals, is one of the largest in the United States.

ANATOMICAL LABORATORY.

The Anatomical Laboratory recently erected for the accommodation of the classes in practical anatomy, is admirably adapted for this purpose; the rooms are large, well lighted, and well ventilated.

The Anatomical Law of Michigan furnishes, without embarrassment, an ample supply of material for the purposes of practical anatomy. All students who desire it and have completed the requirements in descriptive and practical anatomy, can pursue a course in operative surgery upon the cadaver.

In their first year, students have opportunity, under competent instruction, to study comparative anatomy and physiology practically by dissecting various animals. While thus becoming familiar with structures and tissues, they also acquire dexterity in the use of instruments preparatory to work upon the human cadaver.

MATERIA MEDICA.

The collections illustrative of *Materia Medica* consist of a

very complete collection of crude organic medicinal substances, finely displayed and arranged according to their order in Natural History; also about one thousand other specimens of simple mineral and vegetable substances, and pharmaceutical and official preparations, active principles, etc., arranged in groups convenient for study. Medical Botany is further illustrated by several hundred large finely-colored plates.

CHEMISTRY.

The Chemical Laboratory provides thorough instruction and suitable appliances for the practical study of all branches of medical chemistry. In each of the two laboratory courses *required for graduation*, namely, qualitative chemistry (devoted to the study of chemical changes and incompatibilities), and analysis of urine (applied to clinical uses and physiological study), students are taken in sections of limited number for daily drill in the class room, to direct the daily practice in the laboratory. Before beginning laboratory work the student takes a preparatory course, with daily recitations, in chemical notation, and at the close of the work in each course is held to an examination. In each of the required courses just mentioned one section begins work October 1; another section, the first week in January; and a third, the last week in March.

PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

Optional courses in physiological and pathological chemistry, and in toxicology are offered to students qualified to pursue them. The former embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The latter embraces courses in qualitative and quantitative analysis, and the special examination of foods and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiology, physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and coöperation. Courses in quantitative analysis, and in pharmaceutical

preparations, are also open to the students of medicine who may desire such special training.

ELECTRO-THERAPEUTICS.

An optional practical course in electro-therapeutics is offered to advanced students. The apparatus for illustration and experiment consists of representative specimens from the principal foreign and American manufacturers of electrical apparatus. Working models of these are put into the hands of each student for practical use.

THE PHYSIOLOGICAL LABORATORY.

The apartmnets which have recently been provided for this laboratory offer unsurpassed facilities for practical work in physiology, whether of class instruction or of original investigation. A large and well-lighted room is appropriated chiefly to the use of undergraduate students who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of the special senses, muscular contraction, nerve, reflex action, circulation, respiration, and digestion. A smaller room is devoted to advanced work and original investigation. Conveniently situated are an apparatus room, a dark chamber for optical experiments, an incubation closet, and a large work-shop containing machinists' and carpenters' appliances. The instrumental equipment of this laboratory is unusually complete, and contains most of the more essential instruments used in physiological demonstration and research. The apparatus is all new and is of the highest finish and accuracy. The list of instruments includes: five *du Bois* induction coils; two rotating cylinders with clock-work; one *Ludwig's* kymographion; tuning-forks for electrical interruption; one adjustable electrical interrupter with clock-work; *Fick's* spring-kymograph; recording chronographs; *Browning* spectroscope; *Thompson's* galvanometer; *Roy-Gaskell* heart tonometer; *Zeiss* microscopes; foot lathe with working tools; etc., etc. The laboratory is open daily for physiological experiment and research.

THE HISTOLOGICAL LABORATORY.

The Histological Laboratory is well supplied with microscopes, microtomes, and microscopical accessories. In the elementary course the student is instructed in the use of the microscope, and the methods of teasing and of mounting specimens. Most of the preparatory work, such as the staining and the cutting of sections, is done by the instructors, so that the student's time is devoted entirely to mounting, studying, and drawing his specimens. From time to time practical examinations are given in which the student is required to demonstrate some of his mounted preparations. The course includes fifteen lessons of three hours each, and takes up the study of the different tissues of the body and the microscopical structure of the important organs. Provision is made also for those desiring to take advanced work. No one is admitted to this course until he has completed his work in elementary histology. The object of this course is chiefly to teach histological methods. The student is taught the method of fixing and preserving tissues; of imbedding in paraffin, in celloidin, or for the freezing microtome; of section cutting; of staining *in toto* and in sections; of microscopical injection, etc. The laboratory is open daily for original research to those prepared to undertake such work.

THE PATHOLOGICAL LABORATORY.

This Laboratory is furnished with microscopes made by R. & J. Beck, Bausch & Lomb Optical Co., and Zeiss, adapted for every requirement. There is also a special microscope with apochromatic object glass, by Zeiss, for high-power work in bacteriology. There is an ample supply of material for all microscopical study in pathology and every requisite for the cultivation and examination of pathogenic bacteria.

Each student is supplied with a microscope. The course of practical work in this laboratory is restricted to students of the senior year, as the student is only then sufficiently advanced to appreciate and profit by the work. The course is given to students in sections every working afternoon, and commences at two o'clock. It consists of practical instruction in morbid histology and bacteriology.

Course of Practical Pathology.—Instruction is given in staining and mounting specimens, and the changes produced by disease are demonstrated in each specimen made by the student. The course includes all the ordinary new growths, such as cancer, sarcoma, fibroma, etc., and all changes produced in organs by disease, such as tuberculosis in the lungs, Bright's disease of the kidney, atheroma of the aorta, etc. The student will make about sixty specimens, which he will be able to compare with the normal specimens made by him in the histological course, and thus readily appreciate the changes brought about by disease.

Course of Practical Bacteriology.—This course includes instruction in the use of apparatus for bacteriological investigation, in the sterilisation of apparatus, etc., in the making of the various cultivating media, in inoculating tubes, in making plate cultivations, and in inoculating living animals with morbid material for experimental purposes. Students are also taught the various methods for examining sputum for tubercle bacilli, and other fluids from the body for pathogenic bacteria, also how to stain and examine organisms from cultivations. They also stain and mount sections of tissue containing micro-organisms, such as tubercle bacilli in the lungs, and others.

These two courses are combined, students working on certain days in each week at morbid histology and the remaining days at bacteriology. The student taking this course is thoroughly trained in the various methods required to prepare diseased tissue for examination, and he takes away with him a complete set of specimens illustrating all the important changes produced by disease, so that he has always on hand typical slides to compare with any he may make afterwards. He is also taught how to find, isolate, and cultivate micro-organisms associated with any form of disease, and how to inoculate animals with them and carry out an investigation into their nature and properties.

A special feature in this course is the demonstration of methods for carrying on the investigations without elaborate apparatus and at little expense. The science of pathology consists in the study of the etiology or causation of disease and the changes produced in the tissues by it. The student is earnestly

advised to learn thoroughly normal histology in his first year, as without good knowledge of this, it is impossible to understand the first principles of the causation or course of disease, as seen in the various parts of the body.

Opportunity for original work in pathology and bacteriology is given to those capable of undertaking it. Through the kindness of Messrs. R. & J. Beck of London, England, a microscope has been placed at the disposal of the professor of pathology for the use of students in their leisure time to study the specimens they have made in the laboratory.

THE HYGIENIC LABORATORY.

This Laboratory was opened for work in January, 1889. There is a large room devoted to bacteriological work, which contains all of the improved apparatus employed by Koch. The course in bacteriology extends through three months and requires four hours daily in the laboratory for this time. All the known pathogenic and the most important non-pathogenic germs are studied. The microscopes used are those of Zeiss and Leitz. All animals needed for experimentation are supplied by the laboratory. There are also courses in the chemical and bacteriological examination of drinking water, and in the study of food adulterations. Besides these, advanced students who wish to do practical work in the study of ptomaines and leucomaines, are accommodated. All of the courses in this laboratory are optional, and only those students who give evidence of their fitness are admitted, the Director reserving the right to require the withdrawal of any student, who for want of preparation, application, or ability, is in his judgment not making a success of his work.

The objects had in view in the establishment of this laboratory were as follows: 1. Original research as to the causation of disease. 2. Sanitary examinations of food and drink. 3. Instruction to a limited number of students.

Besides the large bacteriological room, there are rooms fitted especially for gas analysis and water analysis, and private rooms for original research. There are also a cold chamber, a disinfecting chamber, and an animal room.

THE UNIVERSITY HOSPITAL.*

The University Hospital, with pavilion buildings of sufficient capacity for a large number of patients, is thoroughly equipped, and is in the immediate charge of a competent house surgeon and physician and an experienced matron. The whole is placed under the direction of the Faculty, who attend regularly upon the patients (each upon such cases as come within his special department) and give clinical instruction in the wards to advanced students. In connection with the hospital there is a spacious clinical amphitheatre where clinics are regularly held every day during the college year, for medical, surgical, gynaccological, and ophthalmological cases, at which time examinations are made, prescriptions given, and surgical operations performed in the presence of the class.

A lying-in ward is established in which senior students are given an opportunity to attend cases of labor, when available, and become familiar with the duties of the lying-in room, under the immediate direction of the professor of obstetrics.

There are separate wards for the reception and treatment of patients affected with diseases of the eye and ear. Students are required to take the history and keep a record of patients, and, under proper supervision, are offered an opportunity of personally examining the patients. It is the aim of the Faculty to make instruction in this branch of medicine systematic and thorough, and this they are enabled to do by an abundance of interesting cases which present themselves in the clinic every year.

For the treatment of diseases of the nervous system the hospital is furnished with apparatus for generating all kinds of electric currents. Attendants especially skilled in the application of electricity and massage are put in charge of such cases.

The hospital is kept open for patients during the whole college year, but no contagious diseases are admitted. Under the present organization, patients are much better accommodated,

* This description refers to the buildings that have been occupied for several years past. A new hospital which will largely improve the accommodations and supply increased facilities, is in process of erection and it is hoped it may be ready for occupancy by the first of January, 1891.

and clinical instruction is rendered more systematic and efficient than was formerly possible. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services of the Faculty being rendered gratuitously to those made available for clinical instruction.

Patients who desire to enter the hospital are requested to write to the resident physician to ascertain if there is room for their accommodation, and to obtain a circular giving more fully the rules governing admission.

About fifteen hundred cases are annually received into the hospital, examined, prescribed for, and operated upon in the presence of the students. A large portion of these are from a distance and are cases of more than common interest, including many cases of chronic diseases of the lungs, the heart, and the nervous system, and of the most important operations in the surgical, ophthalmological, and gynaecological departments.

MUSEUMS AND LIBRARY.

Students in medicine have access to the botanical, zoological, and geological cabinets of the University, estimated to contain 255,000 specimens. The General Library, containing nearly 56,000 volumes, of which 3,903 are medical works, is also open to all students. A complete catalogue of the library, arranged both by authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe are taken and kept on file.

TEXT-BOOKS AND BOOKS OF REFERENCE.

The books mentioned in the following list are standard authorities, and will form a good nucleus for a medical library. Any one of those mentioned in each department will answer the necessities of the student; and, whenever a preference exists, it is given to the one first in order on the list:

MEDICAL DICTIONARY.—Thomas, or Dunglison.

ANATOMY.—Gray; Leidy; Quain; Darling; Holden.

HISTOLOGY.—Schäfer's Essentials of Histology; Klein's Elements of Histology. *For Reference*.—Klein's Atlas of Histology; Toldt's Lehrbuch der Histologie.

PHYSIOLOGY.—First Year—Martin's Human Body; Yeo's Manual of Physiology. Second Year—Foster's Text-book of Physiology; McKendrick's Text-book of Physiology.

CHEMISTRY.—*General Chemistry.* Richter's Inorganic Chemistry; Remsen's Introduction to the Study of Chemistry. *For Laboratory.*—Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry; Vaughan and Novy's Ptomaines and Leucomaines.

MATERIA MEDICA AND THERAPEUTICS.—H. C. Wood, Jr.; Stillé; Bartholow; Ringer.

PATHOLOGY.—Green; Zeigler. *For Reference.*—Hamilton; Payne. *For Laboratory.*—Gibbes's Practical Histology and Pathology.

BACTERIOLOGY.—Klein's Micro-Organisms in Health and Disease.

OBSTETRICS.—Parvin; Lusk; Playfair; Leishman; Galabin. *For Reference.*—Schroeder; Cazeaux; Hodge. *Special Subjects.*—Tanner on Pregnancy; Barnes on Obstetric Operations; Elliott's Obstetric Clinic; Barker on Puerperal Diseases.

DISEASES OF WOMEN.—Thomas; Emmet; Skene; Goodell's Lessons in Gynaecology; Byford; Mundé's Minor Surgical Gynaecology. *Special Subjects.*—Tilt on Uterine Therapeutics; Klob on Pathological Anatomy of the Female Sexual Organs; Peaslee on Ovariectomy; Sims on Uterine Surgery; Emmet on Vesico-Vaginal Fistula; Skene on Diseases of the Bladder and Urethra.

DISEASES OF CHILDREN.—J. L. Smith; Vogel; Tanner; Meigs and Pepper. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; Combe on the Management of Infancy; Routh on Infant Feeding; Holmes, or Guersant, on the Surgical Diseases of Children.

PRACTICE OF MEDICINE.—Palmer; Loomis; Flint; Strümpell; Davis; Bristowe; Roberts. *Special Subjects.*—DaCosta, or Finlayson, on Medical Diagnosis; Loomis on Physical Diagnosis; Hall on Differential Diagnosis; Seifert and Müller on Clinical Diagnosis.

DISEASES OF THE NERVOUS SYSTEM.—Ross; Gowers; H. C. Wood, Jr.; Hammond; Bramwell on Diseases of the Spinal Cord; Ranney's Anatomy of Nervous System.

DISEASES OF THE SKIN.—Duhring; Robinson. *For Reference.*—Bulkley on Eczema and Acne.

SURGERY.—Ashhurst; Walsham's Practical Surgery; Wyeth. *Special Subjects.*—Billroth on Surgical Pathology; Hamilton on Fractures and Dislocations; Reeves's Orthopaedic Surgery; Sayre's Orthopaedic Surgery; Sir Henry Thompson, Gouley, and Otis, on Diseases of the Genito-Urinary Organs. *Minor Surgery and Surgical Appliances.*—Mears's Practical Surgery; Hopkins on Bandaging. *For Reference.*—International En-

cyclopaedia of Surgery; Holmes's System of Surgery; Gross's System of Surgery; Agnew's Surgery; Cornil on Syphilis; Gross on Diseases of the Male Sexual Organs.

OPHTHALMOLOGY AND ŌTOLOGY.—*On the Eye*.—Juler; Schweigger; Saelberg Wells; Loring on the Ophthalmoscope; Landolt on Examination of the Eye. *On the Ear*.—Roosa; Burnett; Pomeroy; Hartmann.

The student who begins a course of reading without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, anatomy, physiology, and general and medical chemistry; then advancing to the other studies, to select one of the first-mentioned text-books in each department, passing to the "*Special Subjects*" only when near the completion of the course.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *twenty dollars*, which covers all the expense for practical anatomy during the whole college course, is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological laboratory. A charge of *five dollars* is made in the pathological laboratory for material used in the combined courses of pathology and bacteriology. A charge of *one dollar* is made to students who take the course in electro-therapeutics.

The professors make no charge for lecture tickets, nor are there any additional charges for the recitations conducted by the assistants to the several professors.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this Department, be permitted such attendance on the payment of the matriculation fee only.

The total amount of fees paid to the University during the whole three years' course, for matriculation, incidental expenses, materials used, and diploma, is, for Michigan students, about \$139.00; and for others, about \$184.00; varying a little with the student's actual laboratory expenses.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office.

For additional information in regard to expenses see pages 29 to 31.

LETTERS OF INQUIRY, ETC.—All letters of inquiry should be addressed to Dr. Wm. A. Campbell, Secretary of the Department of Medicine and Surgery, Ann Arbor, Michigan.

Students arriving at Ann Arbor, and desiring further information should apply at the office of the Secretary in the Medical Building. The office will be open daily during the last week in September, and the Secretary will be in attendance each day from 2 to 5 P. M.

Department of Law.

This Department was opened in 1859, and from the first it has been the constant endeavor of the Faculty to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country. No effort will be spared to make it deserve in the future a prosperity like that it has hitherto enjoyed. A spacious building is devoted to its accommodation, with ample debating and society rooms, and in every respect the conveniences of the Department are exceptionally good.

The course of instruction for the degree of Bachelor of Laws extends over a period of two years of nine months each; and that for the degree of Master of Laws includes an additional year of the same number of months.

When the Department was established, the course of instruction was so arranged that the members of the junior and senior classes both heard the same lectures, receiving to that extent their instruction in common. This method of instruction has been abandoned, and instead thereof a graded course has been adopted, thereby promoting the efficiency of the Department, and making possible a more scientific teaching of law.

The following more specific statements indicate the course of instruction, and the subjects upon which candidates for the degree of Bachelor of Laws are required to hear lectures and to pass satisfactory examinations, give the requirements for the degree of Master of Laws, and include a general description of the work of the Department.

THE LECTURE COURSE.

It is the design of the Department to give instruction that shall fit students for practice in any part of the country. The

course of instruction embraces the several branches of Constitutional, International, Maritime, Commercial, and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and includes such instruction in Common Law and Equity Pleading, Evidence, and Practice, as will lay a substantial foundation for practice in all departments of law.

Lectures are delivered as follows:

TO THE JUNIOR CLASS.

THE LAW OF THE DOMESTIC RELATIONS, *Professor Rogers*.

TORTS, *Professor Rogers*.

PRIVATE INTERNATIONAL LAW, *Professor Rogers*.

PLEADING AND PRACTICE, *Professor Griffin*.

PERSONAL PROPERTY AND TITLE THERETO, BY GIFT, SALE, MORTGAGE, AND ASSIGNMENT, *Professor Griffin*.

AGENCY, *Professor Wells*.

PRIVATE CORPORATIONS, *Professor Wells*.

PARTNERSHIP, *Professor Wells*.

REAL PROPERTY LAW, INCLUDING FIXTURES AND EASEMENTS, *Professor Thompson*.

EQUITY PLEADING AND PROCEDURE, *Professor Thompson*.

BAILMENTS, *Professor Knowlton*.

CONTRACTS, *Professor Knowlton*.

TO THE SENIOR CLASS.

CRIMINAL LAW, AND MEDICAL QUESTIONS BEARING ON IT, *Professor Rogers*.

WILLS, THEIR EXECUTION, REVOCATION, AND CONSTRUCTION, *Professor Rogers*.

THE ADMINISTRATION AND DISTRIBUTION OF ESTATES OF DECEASED PERSONS, *Professor Rogers*.

JURISPRUDENCE OF THE UNITED STATES, *Professor Griffin*.

EVIDENCE, *Professor Griffin*.

THE LAW OF MUNICIPAL CORPORATIONS, *Professor Wells*.

BILLS AND NOTES, AND COMMERCIAL LAW GENERALLY, *Professor Wells*.

CONSTITUTIONAL LAW, *Professor Wells*.

LANDLORD AND TENANT, *Professor Thompson*.

EQUITY JURISPRUDENCE, *Professor Thompson*.

MINING LAW, *Professor Thompson*.

LAW OF CARRIERS, *Professor Knowlton*.

INSURANCE LAW, *Doctor Bigelow*.*

ADMIRALTY LAW, *Judge Brown*.

* Not given in 1889-90.

SPECIAL HEADS OF MEDICAL JURISPRUDENCE, ————. .
TOXICOLOGY IN ITS LEGAL RELATIONS, *Doctor Vaughan*.
LEGAL MICROSCOPY, ————.

Members of the junior class are not allowed to attend the lectures delivered to the senior class. But the members of the senior class, inasmuch as they have been over the subjects of the junior year, are encouraged to attend the lectures delivered to the junior class, so far as they may be able so to do.

TEXT-BOOK INSTRUCTION.

In addition to the instruction by lectures is the instruction by text-books.

The members of the junior class are required to attend daily recitations in Cooley's edition of Blackstone's Commentaries, Anson on Contracts, Stephen on Pleading, and Lube's Equity Pleading.

The following portions of Blackstone's Commentaries are studied by the class: Sections 2 and 3 of the Introduction; chapters 1, 7, and 10 of Book I; all of Book II, with the exception of chapters 18, 22, 27, and 28; chapters 1, 2, 3, 4, 7, and 14 of Book III. The other portions of the Commentaries are omitted on the grounds that they are either covered by the lectures delivered in the Department, or are of no especial importance.

Members of the senior class who come from Code States are expected to attend regular recitations in Bliss on Code Pleading, and they will find the instruction thus obtained invaluable in their subsequent practice. Students from States where the reformed procedure has not been introduced, may or may not, at their option, attend such recitations.

The above text-book work is under the direction of Professor Knowlton, except the work in Lube's Equity Pleading, which is carried on under the direction of Professor Thompson.

As the classes are large each class is divided into five sections, in order that due attention may be given to the individual student.

THE STUDY OF LEADING CASES.

As much benefit can be derived from a proper study of what are known as Leading Cases, and as it is desirable that students should be familiar with the more important of these cases, the members of the senior class are required to make a study of Leading Common Law Cases. The text-book to be used by the class during the year 1890-91 will be announced hereafter. This work is under the direction of Professor Rogers.

MEDICAL JURISPRUDENCE.

It has been thought desirable that students of law should receive instruction in certain branches of medical jurisprudence, and arrangements have been made for the delivery of a course of lectures on certain medico-legal subjects which are of especial interest to the legal profession. These lectures are delivered during the second semester, and to the members of the senior class only.

Lectures are given on some special heads of medical jurisprudence, including signs and symptoms of pregnancy, abortion and premature labor, duration of gestation, puerperal insanity, infanticide, and rape.

The lectures on legal microscopy consist of a discussion of those subjects, liable to come before the courts, where the microscope can be employed as an aid in arriving at a correct diagnosis;—as in the detection and identification of blood stains, of mineral and vegetable poisons, of the complex tissues, of hair, of commercial fibres, etc.

The lectures on toxicology cover the subject of poisons in its medico-legal relations.

ELOCUTION AND ORATORY.

It is important for those who study the law with the view of becoming advocates, that they should give attention to the subject of forensic eloquence, the better to equip them for the performance of their duties as advocates. It is a mistake to suppose that excellence in speaking is simply a gift of nature, and not the result of patient and persistent labor and study.

Instruction in elocution and oratory is highly important to law students. The junior class receive instruction in vocal culture, articulation, and pronunciation; position and gesture; quality and force of voice. An advanced course in oratory is arranged for the senior class.

EXAMINATIONS.

The members of both classes are examined daily throughout the year on the lectures delivered. At the end of the first year the members of the junior class are subjected to an oral and written examination on the lectures delivered during the year, and their promotion to the senior class is dependent on the manner in which they pass such examination. The examination of the junior class at the end of the year is final on the subjects of that year.

At the end of the second year the members of the senior class are required to pass satisfactory oral and written examinations on the subjects lectured on during the senior year.

Satisfactory examinations must also be passed by the members of both classes in the text-books used for the purposes of instruction.

In the case of written examinations the student is required to certify on honor that previous to the examination he had no knowledge as to the questions to be propounded, and that he has received no assistance in making his answers thereto, and has given no assistance to others.

The Faculty do not hesitate to drop a student from the rolls at any time during the year, when satisfied that such student is neglecting his work and not conforming to the requirements of the Department.

MASTER'S DEGREE IN LAW.

At a meeting of the Board of Regents in October, 1889, the following resolution was adopted:

Resolved, That this Board will confer the degree of Master of Laws on any graduate of the Department of Law who pursues the study of Law in this University for one year after graduation, and who completes to the satisfaction of the Law Faculty such a course of study as may be required;

and that the privilege thus extended to graduates of the Law Department of this University is also extended to graduates of other Law Schools, who can satisfy the Faculty of the Department of Law that the course of study for which they obtained their degree was equivalent to the course of study required for the corresponding degree at the Law Department of this University."

In accordance with the action thus taken the Law Faculty decided that candidates for the degree of Master of Laws might select not less than three subjects from among certain enumerated subjects, to which they should devote their attention, under the direction of the Faculty, during the year 1889-90. The candidates for this degree are required, from time to time, to report upon their work and to submit to such examinations as are deemed necessary to determine the thoroughness with which their studies are pursued. The plan thus agreed upon was adopted simply for the year above mentioned. The course to be pursued for the year 1890-91 will be stated in the Law Announcement hereafter to be issued, and for which all students should apply who are contemplating an advanced course in law. Students are not allowed to pursue the course *in absentia*. Before graduation every candidate for the degree of Master of Laws is required to submit to the Faculty a thesis on some approved subject.

REQUIREMENTS FOR ADMISSION.

Any person is at liberty to matriculate in the Department of Law, and have a seat assigned him for attendance upon the lectures.

If, however, the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age, and must pass such examination in respect to general education as shall satisfy the Faculty that his educational attainments are such as will justify his entering upon the practice of the law when his legal studies are completed. Examinations will be held in the Lecture Room, in the Law Building, at 2 p. m., on Monday and Tuesday, September 29th and 30th, 1890. The examination on the first of these days will have reference to general education, and will be on the subjects

hereinafter named. The examination on the succeeding day will have reference to legal education, and is confined to candidates for advanced standing. Applicants for advanced standing are required to be present at both of these examinations. Candidates are required to present themselves on these days, as they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Graduates of colleges, and students who have honorably completed an academical or high-school course, and who present a certificate or diploma from the academy or high school will be admitted without preliminary examination. No student who does not present such certificate or diploma will be admitted as a candidate for a degree, until he has passed a satisfactory examination in arithmetic, geography, orthography, English composition, and the outlines of the history of the United States, and of England.* The examination will be conducted in writing, and the papers submitted by the applicants must evince a competent knowledge of English grammar.

Inasmuch as many present themselves a long time after completing their school education, it may be said that the examination will not be technical. The object is not to ascertain the amount of technical school-book knowledge which the candidate possesses, but the aim is to ascertain the results of his previous training, and his present practical capacity and ability to appreciate the technical study of law.

Candidates for advanced standing will be examined on whatever subjects they may offer themselves for examination on, the examination not being restricted to the subjects included in the junior year, but being allowed as well on the subjects embraced in the senior year. This examination is not a final one

* Ransome's Short History of England, or Green's History of the English People are recommended as affording the student a proper preparation for the examination in English History.

on the subjects examined on, but the candidate must satisfy the Faculty that he has made sufficient progress in his study of the law to justify his admission to the senior class. Before graduation every student is required to pass satisfactory examinations on all subjects included in the course.

Before admission to examination, every student is required to present to the Dean of the Law Faculty the Treasurer's receipt for payment of the matriculation fee and annual fee. It is essential, therefore, that a candidate for examination should apply first to the Steward of the University at his office in University Hall, register his name as a student in the Department of Law, and pay his fees to the Treasurer. He is then entitled to apply for admission to examination, and in case of rejection, the money paid preliminary to such examination will be refunded by the Treasurer.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture room in the order in which they pay their fees to the Treasurer, and each student is expected to occupy, during the session, the seat selected.

CERTIFICATES OF ATTENDANCE.

When a person is connected with the school for a period not entitling him to graduate, he may on application to the Dean of the Faculty, receive an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

REQUIREMENTS FOR GRADUATION.

The degree of Bachelor of Laws will be conferred upon such students as shall pursue the full course of two years in this Department, and pass an approved oral and written examination. It will also be conferred upon those who, having attended another law school for a period equal to one year of our course, or practiced law for one term under a license from the highest court of general jurisdiction in any State, where the requirements for admission to the bar are equal to those in Michigan, shall also pur-

sue one year's course in this Department and pass a like examination.

Special cases depending on previous reading in a law office for a considerable period will be decided by the Faculty on application accompanied by a showing of the facts.

Each candidate for a degree will be required to prepare and deposit with the Faculty, before the commencement of the second semester of his senior year, a dissertation, not less than forty folios in length, upon some legal topic selected by himself. The dissertation must be satisfactory in matter, form, and style; and the student presenting it will be examined upon it.

The Faculty require that the theses shall be printed on a type-writer, or otherwise, and bound, and left with the Department. Special rates can be obtained for doing this work, and two or three dollars will cover the expense of printing and binding. In special cases the Faculty will not insist on this being done, if it should appear to be a burden to a needy student.

MOOT AND CLUB COURTS.

Moot Courts are held from time to time during the term, in which students discuss cases previously assigned them for that purpose by the professors. These Courts are presided over by the professor lecturing for the day, who, at the conclusion, reviews the arguments and gives his decision upon the points involved. The effort here is to make not merely *theoretical*, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Courts are made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and the attention of the Faculty is directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity is afforded all the senior students to participate in these courts.

Moot Courts are conducted on the theory that certain facts are true, and that the only subject open to discussion is the rule of law to be applied to them. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings, and draw up a brief in which the rules of law are

stated under appropriate divisions and sustained by authorities which he proposes to rely upon in his oral argument.

The fact is recognized that it is desirable to combine theory and practice in the regular work of the Department, and such a course is pursued in so far as it has appeared practicable. The effort to make not merely theoretical but practical lawyers may be illustrated by a reference to the course pursued in conducting the Moot Court cases. The class is divided into sections of four each, and each section is required to conduct a case through all its stages, from the commencement of the action to the entry of the judgment, two in each section acting as attorneys for the plaintiff on the one hand and two for the defendant on the other. For these actions statements of fact are prepared which, in the aggregate, involve questions in every branch of jurisprudence, and necessitate the use of every form of pleading. These statements of fact involve not only questions of pleading and procedure, but also questions of law, and success is made to depend upon skill in pleading, combined with knowledge of law. In causes where students from the State of Michigan appear as attorneys the proceedings are governed by the rules of the Circuit Courts of this State; in those cases where the attorneys are students from other States, the proceedings are governed by the rules of the United States Courts, or by the practice of a Code State if the attorneys come from such a State, and so prefer. There is a Clerk of the Court, and the records are carefully and systematically kept, and all the proceedings made to conform strictly to like proceedings and causes in actual practice.

It is believed that a student who conducts a case through a Moot Court in accordance with the practice adopted in this Department will gain a clearer insight into matters of practice than students ordinarily obtain who study in offices.

Club Courts, too, are organized among the students, to be arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These courts, thus far, have been found alike interesting and useful to those who have participated in them. The Club Courts are open to members of either the senior or junior class, and students are strongly recommended to connect themselves with

some one of these organizations. There are also two flourishing literary societies established and conducted by the students of law for purposes of literary culture.

PRIOR READING IN LAW.

The Faculty are frequently applied to by letter for advice upon the question whether it is desirable to enter upon the study of law, and acquire some general knowledge of the principles, before admission to this Department. It is somewhat difficult to lay down rules that can be advantageously applied in all cases, but the Faculty are of the opinion that, for the first year at least, more positive benefit is received from lectures, and more positive advancement in law made, by students who, before coming, have read at least the Commentaries of Blackstone, than by those who are beginners here. But the Faculty are aware of the great difficulty experienced by the student in giving proper direction to his reading and investigation at the beginning; and they do not therefore make it a condition of admission that there shall be any prior reading whatever in law. The want of such reading will, doubtless, in many cases, be fully compensated in the aid the beginner may receive here in the outset. It is not often that the student receives the needed assistance except in law schools. The active practitioner, engrossed with the cares of business, cannot—or at least, as proved by experience, does not—furnish the students who place themselves in his charge the attention and assistance essential to give a correct direction to their reading, and to teach them to apply it usefully and aptly in their subsequent professional life. The reading of a student in a law office is practically the study of law by himself, and without assistance; and he neither acquires that familiarity with books and that facility of reference which it is the aim of this Department to assist him in acquiring, nor learns anything of the practical application of legal principles beyond what he may pick up from observation of the practice of his preceptor.

SPECIAL STUDENTS.

As students come to the University who have been reading

law for a considerable period before making application for admission to the Department of Law, but whose reading has not been sufficiently extensive to bring them within the rule for admission to the senior class, it has been thought best to allow such students to become special students, with the privilege of pursuing a select course of study. They are allowed, under the guidance of the Faculty, to select subjects from the courses of both years.

THE LAW LIBRARY.

The Law Library contains 9,953 volumes, including the reports of every State in the Union, the reports of the Federal courts, as well as a very excellent collection of the English, Irish, and Canadian reports. In addition to the reports is an extensive collection of treatises on American and English law, and copies of the statutes of the several States and of the United States. By yearly additions the effort is to keep the library supplied with new reports as they are issued, and in this way to make it as good a working library for students as could be desired. The library is open for consultation by students from 8 o'clock a. m. to 12 m., and from 1:30 p. m. to 5:30 p. m., as well as from 7 p. m. to 9 p. m., during the academic year. The library is closed on Saturday afternoons and evenings. Students are not permitted to take the books from the library building, but during the hours named are allowed free access to them.

The Honorable C. H. Buhl, of Detroit, has presented to the Law Department of the University what is known as the "Buhl Law Library," consisting of 5,000 volumes of reports and text-books. This generous gift has made the Law Library a most excellent one in which to pursue an extended study of jurisprudence.

The Library was also enriched some years ago by the gift of the valuable law library of the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts.

The Journal of Jurisprudence (Edinburgh), the Law Quarterly Review (London), the American Law Review, the American Law Register, the Criminal Law Magazine, the Albany Law

Journal, the Central Law Journal, and the Federal Reporter, are regularly taken and kept on file.

Students of the Department of Law are also allowed the use of the General Library of the University, which contains 55,703 volumes, and 13,440 unbound pamphlets. See page 17.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Text-books and books of reference are very numerous, and students will find the professors ready to lend them aid in making proper selections. While several copies of each of the leading text-books will be found in the library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. They will find that it will greatly facilitate their studies to have at hand at all times such of the leading text-books as treat of the more important branches of law. It is also advisable for them, when able to do so, to provide themselves with a copy of the statutes of their State. By so doing no loss will be incurred, as the books will be found essential in subsequent practice. But the only books students are required to provide themselves with are those already named as being used for purposes of text-book instruction.

The books mentioned in the following list may be used to advantage upon the subjects named. As a general thing any one of those mentioned in each department will answer the necessities of the student, and, whenever a preference exists, it is given to the one first in order on the list. But in the department of constitutional history all the writers named may be read, or consulted, as for the most part covering different periods of time.

Constitutional History.—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1860); Stubbs's Constitutional History of England; Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

Constitutional and Statute Law.—Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Dicey's Law of the Constitution (of

England); Sedgwick on Constitutional and Statutory Law; Jameson's Constitutional Convention; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

Jurisprudence.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law.—Wheaton's Elements of International Law; Phillimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

Roman Law.—Morey's Outlines of Roman Law; Hadley's Introduction to Roman Law; Mackeldey's Roman Law; Mackenzie's Roman Law.

Contracts.—Parsons; Anson; Metcalf; Pollock; Bishop.

Bailments.—Schouler; Edwards; Story.

Sales.—Benjamin.

Domestic Relations.—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonell on Master and Servant; Simpson on Infants.

Corporations.—Angell and Ames; Field; Morawetz; Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes.—Byles; Chalmers; Parsons; Daniel on Negotiable Instruments.

Torts.—Cooley; Bigelow; Addison.

Evidence.—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton, or Starkie, on Evidence; Rogers on Expert Testimony.

Real Property.—Williams; Washburn; Tiedeman; Boone.

Partnership.—Lindley; Parsons.

Wills and Administration of Estates.—Jarman on Wills (Randolph & Talcott, or Bigelow's edition); Redfield on Wills; Hawkins on Construction of Wills; Williams on Executors.

Common Carriers.—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield or Pierce on Railways.

Equity.—Pomeroy's or Story's Equity Jurisprudence; Snell's, Bisham's, or Adams's Equity.

Criminal Law.—Bishop; Wharton; Harris; May; Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading.—Stephen; Gould; Chitty; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency.—Evans; Story; Wharton.

Damages.—Sutherland.

Mortgages.—Jones.

Insurance.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

Shipping and Admiralty.—Parsons; MacLachlan; Abbott; Desty.

Easements.—Goddard; Washburn.

Taxation.—Cooley; Burroughs; Desty.

MASTER'S DEGREE IN ARTS AND SCIENCE.

Any graduate of the Department of Literature, Science, and the Arts, who is pursuing professional studies in the Department of Law may, upon proper application to the Law Faculty, and to the Faculty of the Department of Literature, Science, and the Arts, be permitted to become at the same time a candidate for the degree of Master of Arts, Master of Science, Master of Philosophy, or Master of Letters, as the case may be, on condition that his term of residence and study covers two years before he can be admitted to an examination for such a degree. The privilege thus extended to graduates of this University is also extended to graduates of other colleges who can satisfy the Faculty of the Department of Literature, Science, and the Arts, that the courses of study for which they obtained their first degree are equivalent to the courses of study required for the corresponding degree at this University.

Useful and desirable opportunities are thus afforded to college graduates who wish to study law and at the same time to supplement their professional studies with a broader knowledge of some of the branches taught in the Department of Literature, Science, and the Arts. They are thereby enabled to enlarge their acquisitions in such branches as will be helpful to them in their professional work.

It is understood, however, that on complaint of unsatisfactory work in this Department, the Law Faculty will require students of law to discontinue their studies for the Master's degree.

CONSTITUTIONAL HISTORY AND POLITICAL SCIENCE.

It seems to be conceded now that the law should be studied in a law school, and that the law school should be connected with a university, where students may avail themselves of opportu-

nities for the study of such other branches of learning as are of allied significance.

It is believed that students in the Department of Law who are not graduates of any collegiate institution, and therefore cannot become candidates for the advanced degree in Arts or Science, may nevertheless derive great benefit from the instruction given on kindred subjects in the Department of Literature, Science, and the Arts. Arrangements have been made by means of which students in the Department of Law, having first obtained permission from the Law Faculty, may, on special application to the Registrar of the Department of Literature, Science, and the Arts, attend lectures delivered in that Department, free of charge. But the Law Faculty reserve the right to require such students to give up any or all studies they may be pursuing in the Literary Department, whenever it appears that the pursuit of these studies is attended with an unsatisfactory performance of the duties required in the Department of Law. Among the subjects upon which instruction is there given may be named the following as being particularly suitable for law students: Political and Constitutional History of England; Political and Constitutional History of the United States; Comparative Constitutional Law; Political and Social History of Europe during the Middle Ages; Elements of International Law; History of Treaties. Instruction is also given in that Department upon social, sanitary, and economic sciences. Compare pages 53 to 57.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

The matriculation fee is paid but once, and entitles the stu-

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

dent to the privileges of permanent membership in any department of the University. The annual fee is paid at the beginning of the first year, and of every subsequent year of attendance. For other details of expenses, see pages 29 to 31.

Those who desire any further information concerning this Department, may address letters of inquiry to the Dean of the Department of Law, Ann Arbor, Michigan.

School of Pharmacy.

This School is organized to give training for services in dispensing pharmacy. It furnishes preparation for the practice of the pharmacist, the general analyst, the manufacturing chemist, and the wholesale druggist. Attention is given to sanitary chemistry, and exercises are required upon adulterations of food as well as medicines. The graduate is qualified for responsibility as the chemist of the medical profession, and of the community. The course also affords a favorable means of mental discipline by systematic work in exact science.

The college year begins October 1, for all students; and closes on Commencement day, the Thursday following the last Wednesday in June. Students of the first year are released the second Friday before Commencement. Admission is not granted at any other time than at the opening of the college year, as students are instructed in classes in progressive order. It is especially difficult to make up for absence in the first week.

REQUIREMENTS FOR ADMISSION.

All applicants for admission must be at least eighteen years of age.

It is advisory to obtain at least a year of practical training in a drug store before entering the college course in pharmacy. The required work in the School leaves the student no time for an engagement in a drug store during the college year.

Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of the collegiate grade, are admitted without examination.

Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following branches:

1. **ENGLISH.**—Each candidate will be examined as to his ability to write English, correct in orthography, punctuation, the use of capitals, grammatical construction, and rhetorical fitness.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures. *Algebra.*—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

3. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book. Instead of Latin, GERMAN to the extent of a full year's study will be accepted. Those who have a speaking and reading acquaintance with German will be held to an examination in the grammar.

Persons over nineteen years of age who bring evidence of having been engaged in the practice of pharmacy, in some capacity, for at least two years, may be admitted (for a part or the whole of the course) upon passing the examination in English; but they shall not be eligible for graduation until they have passed the other examinations described in the preceding paragraphs.

Other applicants will be examined in the following branches:

1. **ENGLISH.**—The same as given above.

2. **MATHEMATICS.**—*Arithmetic.*—The same as given above. *Algebra.*—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, and the use of Logarithms.

3. **LATIN OR GERMAN.**—The applicant may offer (1) three years of preparation in Latin; or (2) two years in Latin and one year in German; or (3) one year in Latin and two years in German. Those who offer three years in Latin will be examined in the *Grammar*—a thorough preparation in the elements; in *Prose Composition*—Jones's Exercises in Latin Prose Composition, or an equivalent in some other text-book; and in *Reading*—four books of Caesar's Commentaries, and six select Orations of Cicero, or an equivalent amount in some other text-book. Those who offer two years of Latin will be examined as above, except in the Orations of Cicero. Those who offer one year of Latin will be examined on an amount equivalent to Jones's First Latin Book. Those who offer one year of German should have had daily recitations on the Grammar during that time, accompanied by weekly exercises in writing, and the reading of seventy-five pages of some German Reader. Those who offer two years of German

should have devoted one year to the reading of some complete work of literary art.

4. **PHYSICS.**—Avery's text-book, or an equivalent.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in Gray's Lessons, and an analysis and written description of fifty species of phanerogams.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in place of a portion of these requirements, an equivalent amount in similar branches of study; and if they show, by examination, or by other evidence, that the work in these branches has been sufficient in amount, such branches will be accepted as a substitute for those omitted.

TIMES OF EXAMINATIONS.

An examination for admission will be held on Friday and Saturday, June 13 and 14, 1890, and another on Monday and Tuesday, September 29 and 30. The examination will begin in each case at 9 A. M., on the first of the two days mentioned. Candidates may take their examination at either of these times, as they prefer.

COURSES OF INSTRUCTION.

STUDIES OF THE FIRST YEAR.

1. *Pharmacy.*—History of pharmacopœias; metrology and chemical problems; operative pharmacy and its physical principles; the galenical preparations; official standards and purity; heat and its uses.

2. *Chemical Physics and Inorganic Chemistry.*—Recitations from text-book and lectures with experimental illustrations.

3. *Pharmacognosy and Systematic Botany.*—With fresh plants, and with crude drugs and other articles of pharmaceutical commerce, inorganic and organic, studied in the hands of the student; structural botany begun.

4. *Sanitary Science.*—Physiological action of foods and of medicines; supply of water and air; defences against contagions; duties of health officers.

5. *Qualitative Chemical Analysis.*—Preparatory work on chemical notation, solubilities, formation of compounds, and chemical equations. A series of analyses, and the study of oxidation and reduction with a notation by negative and positive bonds.

6. *Pharmacopæial Preparations*.—The minor operations of pharmacy; production of the galenicals, solid and fluid extracts, and scale preparations; chemicals and distillations; extemporaneous pharmacy.

STUDIES OF THE SECOND YEAR.

7. *Materia Medica*.—Medicines, their classification, history, physiological effect, and doses. Prescription writing, language, and latinity; prescription reading from actual files of the pharmacy.

8. *Practical Pharmacognosy*.—Recognition of crude drugs, chemicals, and preparations, in the hands of the student.

9. *Microscopical Botany*.—Structural botany continued, with drawings from the microscope by the student; identification of powders; detection of adulterations.

10. *Crystallography*.—Systematic crystallography applied to the recognition of chemicals.

11. *Organic Chemistry*.—The systematic chemistry of the carbon compounds, with experimental illustrations.

12. *Quantitative Chemical Analysis*.—(1) Specific gravity; (2) volumetric determinations; (3) gravimetric determinations; (4) gravimetric separations; (5) water analysis.

13. *Proximate Organic Analysis*.—Tests of identity; methods of separation; analysis of "secret medicines;" drug assays; valuation of foods; toxicology and analyses for evidences of poisoning.

14. *Pharmacy*.—Of inorganic and organic materials, in commercial sources, manufacture, uses, tests, and standards of strength and purity.

15. *Analysis of Urine*.—Normal and abnormal, by chemical, microscopical, and volumetric methods. Physiological and pathological indications.

SCHEDULE OF HOURS.

FIRST YEAR—FIRST SEMESTER.

HOURS.

- | | | | |
|------------|-----------|---------------------------|-----------------------|
| 8¼ to 9¼ | Course 5. | Recitations and lectures. | Daily. |
| 9½ to 10¼ | Course 1. | Lectures and recitations. | Daily. |
| 10½ to 11½ | Course 3. | Wednesday and Friday. | |
| 10½ to 11½ | Course 4. | Lectures. | Tuesday and Thursday. |
| 1 to 5 | Course 5. | Laboratory. | Daily. |

SECOND SEMESTER.

(From beginning of semester to the last of March.)

- | | | | |
|------------|-----------|---------------------------|--------------------------------|
| 8¼ to 9¼ | Course 6. | Recitations. | Monday, Wednesday, and Friday. |
| 9½ to 10¼ | Course 5. | Lectures and recitations. | Daily. |
| 10½ to 11½ | Course 3. | Wednesday and Friday. | |
| 1 to 5 | Course 5. | Laboratory. | Daily. |
| 5 to 6 | Course 2. | Recitations. | Monday, Wednesday, and Friday. |

(From the last of March to end of semester.)

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|------------|-----------|-------------------------------|--------------------------------|
| 10½ to 11½ | Course 3. | Lectures and practical study. | Monday, Wednesday, and Friday. |
|------------|-----------|-------------------------------|--------------------------------|

- 10½ to 12¼ Course 8. Laboratory. Tuesday and Thursday. (Two sections.)
 11½ to 12¼ Course 6. Lectures and recitations. Monday, Wednesday, and Friday.
 1 to 5 Course 6. Laboratory. Daily.
 5 to 6 Course 2. Recitations. Monday, Wednesday, and Friday.

SECOND YEAR—FIRST SEMESTER.

(From beginning of semester to Christmas vacation.)

- 8¼ to 11½ Course 9. Laboratory. Twice a week.
 9¼ to 10½ Course 9. Lecture. Friday.
 10½ to 11½ Course 11. Lectures. Monday, Wednesday, and Friday.
 10½ to 12¼ Course 10. Lectures and practical study. Tuesday and Thursday. (Seven weeks.)
 11½ to 12¼ Course 12. Lectures and recitations. Wednesday and Friday.
 1 to 5 Course 12. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

(From Christmas vacation to end of semester.)

- 8¼ to 11½ Course 9. Laboratory. Twice a week.
 9¼ to 10½ Course 9. Lecture. Friday.
 10½ to 11½ Course 11. Lectures. Monday, Wednesday, and Friday.
 2 to 3 Course 15. Lectures. Monday, Wednesday, and Friday.
 1 to 5 Course 15. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

SECOND SEMESTER.

(From beginning of semester to the last of March.)

- 8¼ to 10½ Course 8. Lessons in museum. Tuesday and Thursday. (Two sections.)
 8¼ to 10½ Thesis. Reading in library. Monday, Wednesday, and Friday.
 10½ to 11½ Course 14. Lectures. Tuesday and Thursday.
 10½ to 11½ Course 13. Lectures and recitations. Monday, Wednesday, and Friday.
 1 to 5 Course 13. Laboratory. Daily.
 5 to 6 Course 7. Recitations. Daily.

(From the last of March to end of semester.)

- 8¼ to 9¼ Course 8. In museum.
 9¼ to 10½ Course 14. Lectures and recitations. Daily.
 10½ to 11½ Course 13. Lectures. Three times a week.
 11½ to 12¼ Thesis. Reading in library. Daily
 1 to 6 { Course 13. } Laboratory. Daily.
 { Thesis. }

SELECTED STUDIES.

Students are received for special lines of technical training, with liberty to take such branches as shall be found profitable to them. All branches of analytical chemistry are open to such as are prepared to take them.

EXAMINATIONS.

In each of the courses of instruction enumerated (1 to 15) an examination is held at the time the work of the course is

completed by the class. For the studies of the first year the principal examinations are held in February and March, and in June. For the second year, examinations are held in December, in February, in March, in May, and in June.

After the examination concluding any course of study, the result is reported to the Faculty, and each student enrolled in the class is recorded as Passed, Conditionally Passed, Provisionally Passed, Not Passed, or Absent. The record is not based wholly upon the examination, but upon (1) standing in recitations through the course, (2) diligence and success in the laboratory work, and (3) standing in the examinations. If "Passed" the student receives credit for the completion of the study reported upon. If "Conditionally Passed," he must make up the condition imposed. A record of "Not Passed" requires the student to go over the regular exercises of the study again. A student "Provisionally Passed" is transferred from the immediate charge of the instructor to that of the Faculty, who will withhold credit until better scholarship is attained in other studies. A record of Provisionally Passed may be changed by the Faculty to a record of Passed, Conditionally Passed, or Not Passed, whenever such change shall be justified by the scholarship of the student in his studies in the school. Whenever the Faculty is satisfied that a student does not fulfil the purpose of his studies, he is informed, and his parents or guardians are advised that he should leave the school. If the advice be not regarded it becomes the duty of the Faculty to take mandatory action.

REQUIREMENTS FOR GRADUATION.

The degree of Pharmaceutical Chemist is conferred upon students who have completed the courses of required study, have obtained credit for examinations in these courses in the manner above stated, and have presented a satisfactory thesis.

The thesis must embody the results of research by the student under the direction of the Faculty. The subject is to be selected as early as the first of March. The investigations may consist in the determination of constants of nature, the correction of chemical formulae and reactions, the chemical and micro-

botanical analysis of plants, the trial of methods of analysis or manufacture, the exposure of adulterations and concealed constituents, the collection of a cabinet, the compilation of a bibliographic index, or research in any branch of pharmaceutical chemistry. A comparison of authorities must be made, and the references given.

Experience in the business of pharmacy is not made a requirement for a degree. A year of pharmaceutical experience after college is worth several years of the same before college. But until experience be obtained, the graduate in pharmacy is not fully ready for responsible service in commercial practice.

POST-GRADUATE STUDIES AND A HIGHER DEGREE.

Extended facilities for advanced studies under instruction are given to graduates who take an additional year in the school. These facilities are adapted to preparation for service in manufacturing chemistry and pharmacy, or in any branch of analytical chemistry. The student elects such laboratory courses and other studies as will be most helpful to him in responsibilities for which he desires to be qualified. Additional study in the Department of Literature, Science, and the Arts may be elected, if the Faculty find such elective work advisory. (See pages 61-63 for the courses in analytical and organic chemistry given in that department.) The following are among the available courses open to graduates:

1. *Quantitative Analysis*.—Advanced quantitative work in any direction. Iron and steel analysis, valuation of fertilizers, mineral waters, brines, etc.

2. *Organic Analysis*.—Proximate analysis, detection of adulterations, assays of drugs, valuation of foods, sanitary chemistry,—laboratory work and reading in the library. Ultimate organic analysis and preparations,—an organized course.

3. *Purification of Chemicals*.—An organized course of laboratory work, furnishing pure chemicals for use.

4. *Physiological Chemistry*.—A laboratory course. *Pharmacology*.—Experimental work.

5. *Assaying of Ores*.—A course in class. *Metallurgy*.—Lectures. Blow-pipe analysis of minerals,—a defined course.

6. *Experimental Researches*.—In manufacturing invention; in ana-

lytical methods; in the pure sciences. Bibliography of pharmaceutical chemistry.

A second degree is offered to resident graduates of this School upon the following requirements, viz., the accomplishment of original research, of an extent representing the average work of a full college year, and of sufficient ability and faithfulness. Applications will be accepted by the Faculty from those who have already shown that they are adapted to engage successfully in investigations. A full record of the work, with citation of authorities, in form for publication, is required. Upon completion of the requirements, the degree of Master of Pharmacy is conferred.

TEXT-BOOKS AND BOOKS OF REFERENCE.

TEXT-BOOKS.

First Year.—In General Chemistry, Richter; in Chemical Physics, Deschanel's Heat and Electricity. In Qualitative Analysis, Prescott and Johnson. In Pharmacy, the U. S. Pharmacopœia and Remington's Practice. In Botany, Gray's Lessons and Manual. In Pharmacognosy, Maisch's Organic Materia Medica. It is very desirable to have either the National Dispensatory, or the United States Dispensatory.

Second Year.—In Materia Medica, Brunton. On Prescription Writing, Gerrish. In Quantitative Analysis, Cheever's Select Methods. In Organic Chemistry, Remsen. In Organic Analysis, Prescott. In Physiological Chemistry, Vaughan. Lyon's Pharmaceutical Assaying is advised.

Students who study in the same room may unite in the use of the dispensatory, and the other larger works.

BOOKS OF REFERENCE.

These are provided in the General Library of the University, which embraces the library of the School of Pharmacy. All the important repositories of chemistry and pharmacy, including the principal periodicals in complete sets, and the latest works of reference, are accessible to the student, and are in use for original research. During the second semester, students have direct access to an alcove supplied with about seven hundred volumes of pharmaceutical literature, and other works can be obtained from the book-room by calling for them.

FEES AND EXPENSES.

For full information in regard to University fees and other expenses see pages 29 to 31.

Letters of inquiry may be addressed to the Dean of the School of Pharmacy, Ann Arbor, Michigan. A register of residences and occupations of the alumni, constituting a full professional directory, revised each year, is given in the special Annual Announcement of the School, which can be obtained on application to the Dean.

Homœopathic Medical College.

The Homœopathic Medical College was established as a Department of the University in 1875. The friends of homœopathy everywhere will be gratified to know that since the establishment of the College wise and liberal provisions have been made by successive legislatures for its maintenance and success. In 1889 the Legislature made a special appropriation for the support of a chair of ophthalmology, otology, and paedology, thus enabling the College to establish a resident professorship in these important branches. This appropriation, in addition to that made for hospital purposes (see page 29), places the College in a most encouraging and satisfactory condition. The continuous progress in the past promises to remain uninterrupted in the future.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be at least eighteen years of age, must present to the Faculty satisfactory evidence of a good moral character, and must have sufficient primary education to make good use of the advantages offered. Graduates of any accredited college, academy, or high school, and persons who hold a teacher's certificate, qualifying them to teach in the common schools of the State in which they reside, are admitted to this College upon presentation of the proper evidence to the Secretary of the Faculty. Other applicants for admission must submit to an examination, in writing, in the branches of a common-school English education.

ADMISSION OF WOMEN.

Women are admitted to this College, as to all other departments of the University, on the same conditions as men.

TIME OF EXAMINATION.

The admission examination will be held at 2 P. M., on Tuesday, September 30, 1890. Candidates are required to present themselves at that time and they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for candidates to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty; but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination. Certificates of time are given only for the actual period of attendance.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine at some other accredited medical college for at least one college year, and who possess the proper qualifications, may be admitted to advanced standing, and may attend such lectures and studies as shall be designated for their special course. Three college courses are in all cases required for graduation and the student is most earnestly advised to spend the whole three years in this College, pursuing systematically the regular graded course.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and according to the class they are to enter; and each student is expected to occupy, during the session, the seat selected. In the advanced lectures the graduating class, by courtesy, are allowed the privilege of the seats nearest the operating table and lecture

desk. The same rule applies to the selection of seats in the Department of Medicine and Surgery.

COURSE OF INSTRUCTION.

SURGERY.—A complete course of lectures on minor surgery and bandaging is given to students of the first year.

The students of the second and third years listen together to a complete course of lectures on operative surgery, fractures, and dislocations, and on the principles of surgery.

Candidates for graduation are required to demonstrate their knowledge of operative surgery by operations on the cadaver, a requisite number being provided by the authorities without expense to the class.

The chair of surgery has an assistant, under whose direction students are allowed to make the necessary preparations for operations and to assist, when assistance is required. Advanced students, under the immediate supervision of the surgeon in charge, are also allowed to treat patients that have been operated upon.

MATERIA MEDICA.—The course in materia medica and therapeutics embraces the study of the toxic and physiological action of remedies, of experiments made upon the healthy, and a careful study of symptomatology. Every effort is made to present in its entirety each drug discussed, and to convey to the student a clear apprehension of its individuality. Drug provings, critical analyses of provings made, and inquiries into the relative merits of different methods of instituting drug provings are also provided for. Provings upon the healthy are made by members of the class, under the instruction of the professor of materia medica.

The regular course consists of 108 lectures, so arranged that the classes, while listening to the same lectures, do separate work. The freshmen take a course of thirty-six hours in pharmacy, chiefly practical, in charge of the assistant to the chair of materia medica. The different classes are quizzed by the assistant, at least once a week, upon the lectures heard during the preceding week, and each class is examined in writing at the close of each semester.

OBSTETRICS, GYNAECOLOGY, AND PAEDOLOGY.—The course of study in these several branches is so arranged that separate lectures are given to the several classes in accordance with the graded course outlined by the Faculty. Thus, the members of the freshman class are drilled in the fundamental branches of gynaecology, being taught the use of instruments, the various methods of making gynaecological examinations, etc. During the second year the student enters upon both didactic and clinical work. Special lectures are delivered to the senior class upon special subjects. Senior students are also required to make physical and local examinations in the sub-clinics of this department, thus familiarizing themselves with the various methods of practising touch, palpation, obstetric auscultation, etc., and utilizing to the best possible advantage the many patients availing themselves of this special department of the clinic.

OPHTHALMOLOGY AND OTOTOLOGY.—Regular lectures on these important specialties are given during the term, amply illustrated from the abundance of clinical material at the disposal of the Faculty. The eye-and-ear clinic has assumed sufficiently large proportions to form one of the most interesting features of the clinical work, and to afford the class every facility for a thorough practical study of all the diseases of the eye and ear which come under the observation of the physician.

THEORY AND PRACTICE OF MEDICINE.—The course in Theory and Practice embodies a thorough discussion of the general subjects belonging to this chair, of the principles underlying homœopathic practice, and of their practical application. Due attention is given to pathology, diagnosis, and the divisions of the science of medicine. No pains are spared to make the student thoroughly familiar with homœopathic practice, and with the latest advances made in medicine.

The lectures are fully illustrated by the medical clinic, which is further utilized for giving special instruction in physical diagnosis and in the use of the various diagnostic instruments now in vogue. Cases in the hospital are assigned, from time to time, to the care of members of the senior class, thus affording them

abundant opportunities for gaining bedside experience in the diagnosis and treatment of disease.

INSTITUTES OF HOMŒOPATHY.—In order to furnish thorough instruction in the distinctive features of homœopathic teaching and practice, a full course of lectures on the Institutes of Homœopathy is given by the professor of materia medica. These lectures consist of a careful study of the *Organon* of Samuel Hahnemann, and of the principles of homœopathy as recognized by the authorities.

SPECIAL COURSES.—Two special courses have been established, one in physiological and pathological chemistry, and another in toxicology. The first embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. The second embraces courses in qualitative and quantitative analysis, and the special examination of foods, and of the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these special courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and co-operation. Courses in quantitative analysis and in pharmaceutical preparations are also open to students of medicine who may desire such special training.

The students of the Homœopathic Medical College receive instruction in all branches not therein provided for from the respective professors in the Department of Medicine and Surgery, and, in those branches, are subjected to the same rules, regulations, and examinations, as the students of that department.

Lectures are delivered daily; and frequent examinations by the assistants to the several chairs are held. The surgical, medical, and gynaecological clinics are held twice a week, at which times examinations of patients are made by the professors in charge, or by students under the direction of the professors, prescriptions given, and surgical operations performed in the presence of the class. Owing to the abundance of clinical material, the several clinics are held on separate days, of which the profession throughout the State will be duly notified.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and some of the lectures and demonstrations, which it is not desirable to present to the two sexes together, are given to them separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various other class exercises, it is found that both sexes may attend with propriety at the same time.

SCHEDULE OF STUDIES.

The following schedule shows the arrangement of studies as given in 1889-90. A new arrangement will go into effect in 1890-91.

FIRST YEAR.

Subjects completed the first year.	{	Minor Surgical Gynaecology.	} In Homœopathic College.
		Minor Surgery.	
		Osteology.	} In Upper Lecture Room.*
		Embryology, Comparative.	
		Physiological Chemistry.	} In Lower Lecture Room.*
		General Chemistry.	
Subjects taken the first year and continued through the second year.	{	Sanitary Science.	
		Histology and Microscopy..	
		Anatomy, Descriptive.	} In Upper Lecture Room.*
		Physiology.	
Practical work that should be completed the first year.	{	Materia Medica.	In Homœopathic College.
		Practical Histology.	{ In the Histological Laboratory in sections of twenty. Fifteen lessons of afternoon work, one lesson each week. Two sections yearly, beginning in October and in February.
		Qualitative Chemistry.	
			{ In the Chemical Laboratory, requiring twelve weeks of afternoon work. Classes begin the first week in October, the first week in January, and the last week in March.

* In Department of Medicine and Surgery.

Practical Anatomy. { Each dissection requires twelve weeks of afternoon work in the Anatomical Laboratory. There are two sections yearly, beginning in October, and in January. Students should complete one dissection in their first year.

SECOND YEAR.

Subjects completed the second year. { * Anatomy, Descriptive.
* Physiology.
Medical Jurisprudence.

Subjects taken the second year and continued through the third year. { Theory and Practice of Medicine.
Surgery.
Obstetrics and Gynaecology.
Materia Medica. } In Homœopathic College.

Practical work that should be completed the second year. { Practical Anatomy. In Anatomical Laboratory.
Analysis of Urine. In Chemical Laboratory.

Optional Courses. { Practical Physiology. In Physiological Laboratory.
Electro-Therapeutics. } In Chemical Laboratory.
Organic Chemistry. }
Advanced Histology. In Histological Laboratory.

THIRD YEAR.

Subjects completed the third year. { Materia Medica.
Theory and Practice of Medicine.
Surgery.
Obstetrics, Gynaecology, and Paedology.
Pathology.
All Special courses, as Ophthalmology, Diseases of the Nervous System, Surgical Anatomy, Diseases of Women and Children, Sanitary Science, Minor Surgery, Physical Diagnosis, Diseases of the Skin, etc., etc.

Practical work. Practical Pathology. In Pathological Laboratory.

EXAMINATIONS.

At the end of each semester, examinations are held on all subjects previously taught, and the grade of each student is entered upon the records of the Faculty. Every student who does not come up to the required standard is notified of his failure,

* In Department of Medicine and Surgery.

and opportunity is given him to prepare for a second examination upon the subjects wherein he has failed, in order that he may enter upon the advanced studies of the next semester.

The final examinations are conducted, in part at least, in writing.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have successfully pursued the study of medicine in some accredited college for the period of three years, the last of which must have been in this College. He must have attended at least seventy-five per cent. of the regular lectures, must have spent the required time in practical anatomy, chemical analysis, etc., in the various laboratories and hospitals, and must have attended the usual quizzes and drills by the assistants of the several chairs. He must also have passed satisfactory examinations on all the studies included in the curriculum.

Students who have completed full college courses for the first and second years in an accredited medical college will be permitted to enter the third year and complete the studies of that year in this College, and to present themselves for examination for the degree at the end of the year.

All candidates for graduation must present to the Secretary time-certificates from the Secretary of the Faculty of the Department of Medicine and Surgery, showing what lectures they have attended in that department.

FACILITIES FOR INSTRUCTION.

The unsurpassed facilities offered by the University of Michigan for thorough study and for original work in various directions are in themselves worthy the serious consideration of all medical students.

The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, and pathology. The facilities for the study of chemistry, afforded by the chemical laboratory, are not excelled in any medical college in this country, and the arrangements of the

laboratory work are such that medical students, in classes, and working under the direction of the professor in charge, receive practical instruction in the courses on qualitative chemistry, and in the analysis of urine, a knowledge of which has become absolutely indispensable to the successful physician. The histological laboratory, amply supplied with microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and in histology. The new hygienic and anatomical laboratories, recently erected and open to all students of the University, are models of beauty and convenience, affording facilities for instruction in hygiene and in practical anatomy, unsurpassed, if equalled, by those of any other institution of learning in the United States. In addition to these, students have free access to the general and special cabinets of the University, containing about 255,000 specimens. The scientific and philosophical lectures, collateral to medicine, given in the Department of Literature, Science, and the Arts, are also open to them.

The Homœopathic College, in addition, possesses the valuable collection of anatomical and pathological specimens presented to it by Dr. J. N. Eckel, of San Francisco, Cal., and Dr. A. I. Sawyer, of Monroe, Mich.; these, already comprising much valuable material, are constantly growing in importance through contributions from friends of this institution.

The lecture room and amphitheatre are arranged conveniently, have ample seating capacity, and embody the conveniences and necessities which are essential points to the teacher and students.

The Hospital * is in charge of a competent resident medical officer and an experienced matron; it is provided with a corps of trained nurses, wards for male and female patients, special rooms for antiseptic surgery, dispensary, etc., all of these under the immediate direction of the Faculty, the members of which attend upon the sick in the hospital, and draw from them the material for the clinical instruction of the class.

* A new hospital, which will largely improve the accommodations and supply increased facilities, is in process of erection, and it is hoped it may be ready for occupancy by the first of January, 1891. See, also, page 29.

The clinical advantages offered are more than ample to meet the demands of any school. Although not placed in the midst of a populous city, the College has had no difficulty in securing all the clinical material which could be utilized, embracing almost every pathological condition likely to occur in daily practice, and a great variety of rare cases and of surgical operations of unusual importance.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Any one of the following text-books in each department will answer the necessities of the student; and, wherever a preference exists, it is given to the one first in order on the list.

ANATOMY.—Gray; Leidy; Quain; Darling; Holden.

PHYSIOLOGY.—Martin; Yeo; Foster; McKendrick.

CHEMISTRY.—*General Chemistry*.—Richter's *Inorganic Chemistry*; Remsen's *Introduction to the Study of Chemistry. For Laboratory*.—Prescott's *First Book in Qualitative Chemistry*; Vaughan's *Physiological Chemistry*; Vaughan and Novy's *Potomaines and Leucomaines*.

MATERIA MEDICA AND THERAPEUTICS.—Hughes's *Pharmacodynamics*; Hempel and Arndt's *Materia Medica and Therapeutics*; Farrington's *Clinical Materia Medica*; Hahnemann's *Materia Medica Pura* (translated by R. E. Dudgeon, M. D.).

PHARMACY.—O'Connor's *American Homœopathic Pharmacopœia*.

INSTITUTES OF HOMŒOPATHY.—Hahnemann's *Organon* (Wesselhœft's translation); Dunham's *Science of Therapeutics*; Ameke's *History of Homœopathy*; Dudgeon's *Lectures on Homœopathy*; Dake's *Therapeutic Methods*; Hughes's *Knowledge of the Physician*.

BOTANY.—Gray's *Manual*.

PATHOLOGY.—Green; Ziegler. *For Reference*.—Hamilton; Payne. *For Laboratory*.—Gibbes's *Practical Histology and Pathology*.

DISEASES OF WOMEN.—Southwick; Ludlam; Cowperthwaite; Skene; Hart and Barbour; Byford; Goodell.

OBSTETRICS.—Guernsey; Leavitt; Lusk; Parvin; Galabin; Playfair. *For Reference*.—Cazeaux and Tarnier.

DISEASES OF CHILDREN.—Hartmann; Teste; Eustace Smith; Edmunds. *Special Subjects*.—Eustace Smith on the *Wasting Diseases of Infancy and Childhood*; West on the *Nervous Diseases of Childhood*; Routh on *Infant Feeding*.

THEORY AND PRACTICE.—Arndt's *System of Medicine*; Hughes's *Manual of Therapeutics*; Lilienthal's *Therapeutics*; Baehr's *Therapeutics*; Da Costa on *Medical Diagnosis*; Clapp on *Auscultation and Percussion*; Loomis's *Practice of Medicine*.

SURGERY.—Helmuth; Hamilton; Erichsen. *Special Subjects.*—Hamilton on Fractures and Dislocations; Keyes on Venereal Diseases; Sayre on Club Foot; Otis on the Genito-Urinary Diseases; Ranney on Surgical Diagnosis. *Minor Surgery and Surgical Appliances.*—Wales; Hamilton; Heath.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler; Norton; Wolfe; Buffum; Scelberg Wells; Dewecker; Alt. *On the Ear.*—Politzer; Winslow; Roosa; Burnett; Sterling.

URINARY PHYSIOLOGY AND PATHOLOGY.—Clifford Mitchell; Vaughan; Hassall; Beale; Parkes; Thudichum; Neubauer; Vogel.

HISTOLOGY.—Schäfers Essentials of Histology; Klein's Elements of Histology. *For Reference.*—Klein's Atlas of Histology; Toldt's Lehrbuch der Histologie.

PHYSIOLOGICAL CHEMISTRY.—Brunton's Handbook for the Physiological Laboratory; Thudichum's Manual of Chemical Physiology. *For Reference.*—Lehmann's Physiological Chemistry.

ELECTRO-THERAPEUTICS AND ELECTRO-SURGERY.—King; Beard and Rockwell; Butler.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *ten dollars* an extremity is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological laboratory. A charge of *five dollars* is made in the pathological laboratory for material used in the combined courses of pathology and bacteriology. A charge of *one dollar* is made to students who take the course in electro-therapeutics.

* The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents. The Matriculation Fee is paid but once, and entitles the student to the privileges of permanent membership in the University.

A resolution of the Board of Regents provides that any graduate of any respectable and recognized medical college, who may desire to attend this College, be permitted such attendance on the payment of the matriculation fee only.

TABLE OF FEES.

College Fees, first year	For Michigan Students, \$	35	For all others,	\$	60
" " second year	" " "	25	" " "	"	35
" " third year	" " "	25	" " "	"	35
<hr/>					
Total Fees for three years.....	" " "	\$ 85	" " "	\$	130
Diploma Fee	" " "	10	" " "	"	10
Material for Dissection.....	" " "	20	" " "	"	20
Laboratory Expenses.....	" " "	about 24	" " "	"	about 24

For additional information in regard to expenses, see pages 29 to 31.

Students arriving at Ann Arbor, and desiring further information, should apply at the office of the Faculty, in the Homœopathic Hospital, North University Avenue. The office will be open daily during the last week in September, and members of the Faculty or the Resident Surgeon will be in attendance. The office hours of the Dean are from 9 to 11 a. m.; of the Secretary, from 3 to 5 p. m.

All letters of inquiry should be addressed to Dr. James C. Wood, Secretary of the Homœopathic Medical College, Ann Arbor, Michigan.

College of Dental Surgery.

The College of Dental Surgery was established as a Department of the University in 1875. The college year begins October 1st, and continues till the last part of June. There is a Thanksgiving recess of three days, a vacation of two weeks at the Christmas holidays, and a recess of one week in the month of April. The lectures continue to June 15th.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, and present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the University, or a graduate of some recognized college, academy, or high school, every candidate must be examined as to his previous education and his fitness to enter upon the technical study of dentistry. The examination will be chiefly in writing, and will embrace the usual branches of an English education. In order to secure release from this examination, the candidate must present his diploma or certificate of graduation. A knowledge of languages other than English is not required, but a limited acquaintance with Latin and Greek would be exceedingly useful to the student as an aid in comprehending scientific terms, which are largely of Latin or Greek origin. Students contemplating a course of dental study would derive great benefit even from a few months of study, under an instructor, of the Latin and Greek grammars.

The examination will be held in Ann Arbor on Monday, Sept. 29th, 1890, at 2 P. M. Candidates are expected to be present at that time. To provide for cases in which it is impossible for the applicant to be present, other examinations will be held at such times as may be determined by the Faculty.

Before admission to examination every student is required

to present to the Dean of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in this College, and pay his fee to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Admission examinations are also conducted, at any time designated by the examiners between June 1 and September 20 of each year, at the places and by the persons named below.

Dr. Wm. Mitchell, No. 29 Upper Brook St., London W., England.

Dr. J. G. Friederichs, No. 155 St. Charles St., New Orleans, La.

Dr. J. G. Templeton, 299 Penn Ave., Pittsburgh, Pa.

Dr. Victor H. Jackson, 6 E. 126th St., New York, N. Y.

Dr. John W. Gale, Canandaigua, N. Y.

Dr. C. T. Stockwell, 327 Main St., Springfield, Mass.

Dr. Alfred W. Hoyt, Chicago, Ill.

Dr. Immer C. St. John, Minneapolis, Minn.

Dr. T. J. Hill, Fargo, Dakota.

Dr. W. J. Younger, San Francisco, Cal.

Dr. J. Taft, 122 W. 7th St., Cincinnati, O.

In order to receive credit for a full course, students must enter not later than October 15th.

Students are allowed to select seats in the lecture rooms and places in the dental laboratory in the order in which they matriculate; and each student is expected to occupy the seat selected during the session.

COURSE OF INSTRUCTION.

In the arrangement of the course of study it is the aim to make it such as will meet the requirements of the student and the expectations of the profession, and secure the greatest benefit to the public. It is generally conceded that graded and progressive work secures the best results in education. To meet the requirements of the constantly increasing demands of dental science, and to accommodate and benefit those students who desire a thorough dental education, the course of instruction has recently been extended to three full college years, of nine months each. This extension of the course has been adopted in

order that time and opportunity may be had for more systematic and thorough work in all branches of science now taught in dental schools, and, in addition, the collateral medical and scientific studies made necessary by the rapid progress and high attainments of the science of dentistry; and also that a more satisfactory grading of the classes may be secured.

In the arrangement of the work a graded course of study is combined with repetition of the more important lectures, thus obviating the objection of dismissing one part of a subject before its relations to other parts can be seen and appreciated, and also avoiding the confusion incident to the presentation of too many parts of the general subject, at the same time, to the mind of the student at an early period of his studies.

The extended course affords time for the teaching and study of subjects not generally taught, or but very imperfectly, in many dental schools; and especially does it give more time for thorough work in the laboratories. Though not fully covering the defects of preliminary education, this extended course, accompanied by repeated examinations and written exercises, remedies some deficiencies of earlier training, and is of itself an efficient means of mental discipline, and of literary as well as scientific culture.

SCHEDULE OF STUDIES.

FIRST YEAR.

Subjects completed the first year.	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 5px;">{</div> <div> Osteology. Histology, including laboratory work. Sanitary Science, including bacteriology. Practical Anatomy, one dissection. </div> </div>
Subjects taken the first year and continued through the second year.	<div style="display: flex; align-items: center;"> <div style="font-size: 3em; margin-right: 5px;">{</div> <div> Descriptive Anatomy. Materia Medica. General Chemistry, first half of year. Physiology, last half of year. Prosthetic Dentistry, including experimental work in the laboratory every afternoon. </div> </div>

SECOND YEAR.

Subjects completed the second year.	{	Descriptive Anatomy.
		Materia Medica.
		General Chemistry, first half of year.
		Physiology.
		Analytical Chemistry.
Subjects taken the second year and continued through the third year.		Prosthetic Dentistry.
	{	Theory and Practice of Dentistry.
		Oral Pathology and Surgery.
		Dental Anatomy and Histology.
		Clinical Dentistry.

THIRD YEAR.

Subjects completed the third year.	{	Theory and Practice of Dentistry.
		Oral Pathology and Surgery.
		Dental Anatomy and Histology.
		Clinical Dentistry.
		All Optional Courses, as Analysis of Saliva, Practical Bacteriology, Organic Chemistry (lectures), General Pathology (lectures), and Diseases of Women and Children (lectures).

All students of the first and second years are obliged to pass an examination on the required branches of their respective courses, before leaving the College at the end of the term. This examination is held between the first and fifteenth of June, each year, and no student who has failed to pass two of the required branches in his course, at this examination, is admitted to an advanced class during the first semester of the following year. No standing is given or certificate issued to any one who has failed to pass any of these examinations. Certificates of time are given for the actual period of attendance only.

Anatomy, the groundwork of dental science, is studied didactically and practically. A full course on general anatomy is taken with the medical classes in the Department of Medicine and Surgery. Special instruction is also given in the anatomy and histology of all that pertains to the oral apparatus, embracing also particular attention to *comparative* dental anatomy.

In the histological laboratory the principal structures and

tissues of the animal body are studied in detail, and special attention is given to their pathology, including the minute study of the new formations. The student not only acquires a knowledge of animal structures and tissues, but becomes familiar with the workings and uses of the microscope.

In view of the important part chemical agents and processes play in the dentist's laboratory and operating room, and the marked influence they have in diseases of the teeth and associated parts, students are required to attend lectures on inorganic and organic chemistry. They also have the advantages of the chemical laboratory, for the practical study of all those agents or secretions that concern their future needs in the prevention and cure of disease. Courses in analysis of saliva and of urine are optional to the student.

Knowing how seriously the conditions of maternity often disturb the system, the dental student may take with profit the instruction given in the lectures on gynaecology. The diseases of children, also, as affecting dentition, and as affected by it, should receive special attention.

In the course on the theory and practice of dentistry, the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation as well as restoration to health when diseased, are presented. This instruction applies not only to the various affections of the teeth and contiguous parts, but to the character and application of remedial agents, and to the various approved methods of operating, with all the details of conditions, materials, instruments, and appliances. The student is required to make his attainments thorough in all these particulars, in order that he may not be at a loss for a guide in his treatment and manipulation.

Provision is also made for the treatment of all pathological conditions of the mouth and associated parts, including such surgical operations as may be necessary, the administering of anaesthetics, extraction of teeth, the treatment of diseased and irregular teeth, analysis of the secretions of the mouth, etc.

In clinical dentistry the most thorough practical instruction in details of operations, and in the preparation of instru-

ments and appliances used, is given. The rooms are well arranged, and supplied with operating chairs and other requisite facilities. All valuable appliances will be made available, and instruction in their use given. Each member of the senior class must have a dental engine; and he is required to spend a part of each day in the clinic room.

The instruction in prosthetic dentistry embraces everything necessary to enable the dentist successfully to supply substitutes for lost dental organs. Special reference is had to the principles involved in the restoration of the natural functions of the teeth, viz., mastication, speech, and expression of features, keeping in view always the health and future usefulness of the living parts. Practical and valuable modes only are taught.

Those who have laboratory tools and appliances should bring them; those who have not, are advised to defer purchasing till they arrive, as they will then have the aid of the teachers in making proper selections. Each student, before beginning his work, is required to procure the tools and appliances necessary for his own use. A list of these will be furnished him.

Particular attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

REQUIREMENTS FOR GRADUATION.

The candidate for graduation must be twenty-one years of age; must possess a good moral character; must have devoted three years to the study of dentistry, and have made such attainments in all the branches of the course of study, as shall be satisfactory to the Faculty; and must have attended three full courses of lectures in this College. It is recommended that he attend these consecutively.

One course in any other dental college having an equal or similar standard of requirements to this, will be accepted as an equivalent of one course here. But all applicants offering such an equivalent shall, at the option of the Faculty, submit to an examination.

A graduate of the Department of Medicine and Surgery may enter this College, and, if found qualified, may graduate after two years have been devoted to the study of dentistry, including the courses of lectures.

At least one year's continuous study and work will be required of all candidates for a degree upon a post-graduate course.

Every candidate will be required to write from time to time upon the various branches of his course, and may at the discretion of the Faculty be required to prepare a thesis upon some assigned topic; he must present for inspection practical operations performed by himself in this College, and give satisfactory evidence of his skill and ability as a practitioner.

Under the provisions of the "Dentists Act" of Great Britain, graduates of this College, who are not British subjects, are allowed by the General Medical Council to register and to practice dentistry in that country, without further examination.

FACILITIES FOR INSTRUCTION.

The Dental Museum is supplied with a large number of anatomical, physiological, pathological, and histological preparations, including a series illustrating dentition from infancy to the completion of the process in the adult, and the normal changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facilitate the study of the nervous and vascular systems. The design is to make every practicable appliance in this direction available.

In addition to the above, the museum of anatomy and materia medica is rich in material to aid the student. The museum is always open to students, and the collections are constantly used in illustrating lectures. The Museum of Natural History, which contains more than 250,000 specimens, is also accessible to all who desire its advantages.

The chemical and histological laboratories are well furnished with all needed apparatus for instruction and research. These laboratories are open through the college year.

The University Library is open daily, and offers its advantages to all who desire to use it. It includes the Medical Library, comprising 3,903 volumes. A library of dental science, containing almost every known work on this specialty, including an almost complete file of every Dental Journal published, is shelved in the dental building, where it is accessible to all students.

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the Department of Literature, Science, and the Arts.

TEXT-BOOKS.

ANATOMY.—Gray; Tones.	PROSTHETIC DENTISTRY.—Richardson.
PHYSIOLOGY.—Martin; Foster.	ORAL DEFORMITIES.—Kingsley; Talbott; Guilford.
HISTOLOGY.—Schäfer; Klein.	CHEMISTRY.—Miller; Mitchell.
PATHOLOGY.—Green.	PRACTICAL CHEMISTRY.—Prescott.
DENTAL PATHOLOGY.—Wedl; Ingersol.	THERAPEUTICS.—Gorgas; Bartholow; Wood.
ORAL SURGERY.—Garretson; Tones.	MEDICAL DICTIONARY.—Thomas.
OPERATIVE DENTISTRY.—Harris; Taft.	METALLURGY.—Essig.

REFERENCE BOOKS.—American System of Dentistry; Watts's Chemical Essays. .

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

LABORATORY EXPENSES.—*Chemical Laboratory*.—Students are required to pay for the materials and apparatus actually consumed by them. Experience has shown that the average expense for all courses is about one dollar and twenty cents a week. *Dental Laboratory*.—The expenses for tools for each student are

* The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

about *thirty dollars*, and for incidentals, gas, teeth, etc., about *fifteen dollars*. These are furnished at the College under the direction of the Faculty.

OTHER EXPENSES.—For further information in regard to fees and expenses, see pages 29 to 31. The average total expenses of a student of dentistry, including University fees, are from two hundred to two hundred and fifty dollars for the college year of nine months.

Those who desire further information concerning the College of Dental Surgery may address Dr. J. Taft, Dean, Ann Arbor, Michigan.

List of Graduates of 1889.

ORDINARY DEGREES.

BACHELOR OF LETTERS.

James Ware Adams,	Nellie Minerva Johnson,
Henry Towne Bannon,	Bertha Joslyn,
Blanche Kingsbury Barney,	Carrie Marion Palmer,
Horace Van Birdsell,	Lewis Wallace Parker,
Charles Edward Everett,	Harmon Chamberlin St. Clair,
Belva Mary Herron,	May Turner,
Kate Lincoln Johnson,	Florence Ella Whitcomb,
	Lewis Smith Young.

BACHELOR OF SCIENCE.

(IN BIOLOGY.)

Frank Alsworth Waples.

BACHELOR OF SCIENCE.

(IN MINING ENGINEERING.)

Homer Mason Sackett,	Otho Sibley Stull,
Frank Clemes Smith,	Philip Robert Whitman.

BACHELOR OF SCIENCE.

(IN MECHANICAL ENGINEERING.)

William Allan Livingstone,	William Vaughan Moses,
Frederick Homan Loveridge,	Ernest Blackman Perry,
Eugene Loring McAllaster,	Gordon Edward Stannard.

BACHELOR OF SCIENCE.

(IN CIVIL ENGINEERING.)

Flavius Morse Crocker,	Richard Khuen, Jr.,
Herbert Samuel Crocker,	William Philander Rounds,
Julius Weisbach Hegeler,	Louis Henry Shoemaker,
William J. Hussey,	Miner Cole Taft,
	Gardiner Stewart Williams.

BACHELOR OF SCIENCE.

(IN GENERAL SCIENCE.)

Louis Begemann,	Will Hittell Sherzer,
Andrew McCormack Brown,	Alva Beech Thompson,
Albert Morton Shaw,	Horace Vaughn Winchell,
James Burris Wood.	

BACHELOR OF PHILOSOPHY.

Fannie Barker,	George Preston Hyde,
Willis John Beckley,	Lewis Ralph Jones,
Clarissa Sophia Bigelow,	Frances Charlotte Lennox,
Hollie Broughton Bracewell,	Lewis Murbach,
Allen Lysander Colton,	Minnie Howe Newby,
William Herman Detwyler,	Charles Everett Rockwood,
William Worth Eagan,	Lillie Emma Rosewarne,
Charles Kirke Eddy,	Arthur Eli Rowley,
Effie Matilda Gaylord,	Oscar Frederick Schmid,
Charles Edwin Goddard,	Albert Laverne Shepard,
Charles Alexander Green,	Warren Hadley Smith,
William Welton Harris,	Eliza Read Sunderland,
Frank Winchester Hawks,	Charles Philender Taylor,
Charles Sumner Hyde,	Zada J. Wilson.

BACHELOR OF ARTS.

Fred Hull Abbott,	Anna Susan Jones,
Isabella Montgomery Andrews,	Fred Sibley Loomis,
Virginia Beauchamp,	Clyde Vallandigham Nafe,
Eugene Nimmons Best,	Robert Bruce Preble,
Thaddeus Lincoln Bolton,	Frederick Leroy Prentiss,
Willis Elmer Bond,	Gertrude Belle Rose,
Benjamin Parsons Bourland,	George Frederick Rush,
John Edward Boyer,	Thomas Chalkley Severance, Jr.,
Elmer Ellsworth Brown,	Lizzie Ide Shiell,
Ellen Elizabeth Garrigues,	Josephine Eliza Sondericker,
John Greenshields,	Fred Bernard Spaulding,
Julian Dana Harmon,	Clement Richelieu Stickney,
Walter Simpson Holden,	Albert Brodie Stone,
Phebe Anne Isadore Howell,	James Ely Talley,
Arthur Mekeel Hussey,	Katherine Mary West,
Alfred Eugene Jennings,	Sara Whedon,
Hattie Crosby Jennings,	Dean Conant Worcester,
Arlisle Margaret Young.	

MASTER OF LETTERS.

Elisha Monroe Hartman, B. L.

MASTER OF SCIENCE.

Henry Benner, B. S.,

Charles Wright Dodge, B. S. (Biol.).

MASTER OF ARTS.

Ernest Alanson Balch, A. B.,

Ida Maria Street, A. B.,

Mary Louise Jones, A. M.,

William Michael Zumbro, A. B.

DOCTOR OF SCIENCE.

Erwin F. Smith, B. S. (Biol.).

DOCTOR OF PHILOSOPHY.

Yeihiro Ono, Ph. B.,

Fred Newton Scott, A. M.

DOCTOR OF MEDICINE.

(DEPARTMENT OF MEDICINE AND SURGERY.)

Christopher Adamson,

William S. Connery,

Adrian Richard Alfred,

David Goldthwait Coolidge,

Leighton Pine Allen,

George Lanning Cramer,

Bion Arnold,

Charles Stanley Crane,

Eunice Jemima Avery,

John Sedgwick Dean,

Thomas James Avery,

Will Harry Dodge,

William Allen Baker,

Presca Isaac Edwards,

As of the Class of 1870.

Thomas Stewart Blair,

William Charles Elliott,

John Alexander Blake,

Fred W. Essig,

Carroll Osborne Boyce,

Jessie White Findlay,

George Johnson Boyd,

Charles Henry Fowler,

George Alfred Bradburn,

Christian Seehuusen Fries,

James Ritchison Breakey,

James Skiffington Grant,

Mary Brown,

John N. Green,

Mathilde Buck,

Fanny Sarah Crossett Hall,

Henry Clay Burcham,

Franklin Pierce Hannon,

Charles Newell Burton,

Ernestine Julia Hicks,

Francis Henry Callow,

Elden William Hills,

Harry Lee Canright,

Andrew John Hoenes,

Charles Ogden Cartwright,

Katherine Quane Holden,

Elizabeth Janette Child,

Peter William Holleman,

James Edward Childs,

Alex F. Irwin,

Cassius Mentor Coldren,

John Linn Irwin,

George Orlo Jefferson,
 Cornelius Adrian Johnson,
 Walter James Johnson,
 Lewis Hasbrouck Kemble,
 Frances Elizabeth Kyle,
 Andrew Stewart Lobingier,
 Willis Allen McConkie,
 Archibald McEacheran,
 Charles McGregor,
 Harry McKennan,
 George Stewart McPherson,
 Andrew Milton Miller,
 Perry Harris Munger,
 Walter Starnes Nash,
 Mary Anna Norton,
 Clara Augusta Oswald,
 Ernest Henry Parker,
 John Allen Parks,

Edward Peirce,
 Samuel Lee Probert,
 Frank Rainie,
 Sylvanus W. Robillard,
 George Austin Rowe,
 George John Schneider,
 Scott Searles,
 Albert William Sherman,
 Boghos Tevan Simonian,
 William Milton Slaght,
 George Slocum,
 Fred Heman Spaulding,
 Minnie Ellen Stacks,
 Hugh Seymour Townsend,
 Wadsworth Warren,
 Emanuel Sherman Wenger,
 William Bennajah Watts,
 Horace Wilcox,

Samuel Ellsworth Yoder.

BACHELOR OF LAWS.

Thomas Jay Adams,
 William Grant Adams,
 Armand Albrecht,
 James Douglas Armstrong,
 James Jaquess Ashworth,
 Robert M. Barnes,
 Lloyd Warfield Bassett,
 Carl Louis Baumann,
 Vincent Earle Bayless,
 Raymond Walter Beach,
 Abraham Benedict,
 Frank Bennett,
 William Blincoe,
 Louis Claire Boyle,
 Lincoln Ellison Bradt,
 Arthur Wolfe Brady,
 Fordyce Wiswell Briggs,
 Frederick Anson Brown,
 Edward Anderson Burton,
 Joseph Beatty Burt,
 Robert Milligan Carothers,
 Henry Manson Carr,
 Silver Chaney,

Charles Cameron Chapplelear,
 Luke Henry Cheney,
 James Alexander Chiles,
 James H. Clancy,
 Peter Daniel Connolly,
 James Lyons Cooper,
 John Harrod Couch,
 John Henry Coyne,
 Sanders Brownlow Cox,
 William Elijah Cox,
 Robert Emmett Cresswell,
 Francis Marion Crum,
 William Harvey Dailey,
 August Bengtson Darelus,
 Elbert Russel Dean,
 John Charles Dooling,
 Melvin Loring Douglass,
 James Nicholas Edmonson,
 Earle Edmundson,
 Frederick Stewart Fish,
 Charles Clifton Forry,
 Frederick Debow Fulkerson,
 Joseph Lawrence Glover,

George Brenton Greening,
William Wickware Griffin,
Milton Samuel Gunn,
Justice Uhler Haley,
Charles Martin Hammond,
John Dallas Harger,
Charles Harshman,
James Adelbert Harris,
Charles Henry Hart,
Harry C. Hayman,
Henry Ward B. Hicks,
Seward Higby,
Volney Omeara Hildreth,
John McClellan Hoel,
Otho Ruby Hopson,
Louis Edgar Howlett,
George Washington Huston,
Samuel Robb Ireland,
William Hutchinson Jamison,
Winfield Scott Johnson,
William Patrick Kearns,
George Lincoln Keeler,
Ernest Robert Keith,
William Carroll Henry Keough,
John Albion Kimball,
John Claus Kleist,
James Fremont Knight,
Moses Barnett Lairy,
James Porter Leasure,
Grant Everett Lilly,
James Allen Martin,
Loyal Johnston Martin,
John Wilbur Mathews,
Charles Whitfield McAnn,
James Francis McElroy,
Josiah Wheeler McIntyre,
Albert Edward McManus,
Emil Adolphus Meyer,
James Miles,
Charles William Miller,
Fred Hiram Mills,
Charles Manley Moffet,
Deane Stockton Monahan,
James Guthrie Montgomery,

James Archibald Muir,
James Buchanan Murphy,
Taijiro Nakagawa,
James Carson Needham,
Will Edwin Newlin,
Louis Delevan Niles,
Stephen Robert Nisbet,
John McFarland Ormond,
Gunrock Otsubo,
John Hamilton Patten,
Edmond Kimball Pendergast,
Fred Pennington,
Harvey Arthur Penny,
Earl Henry Prince,
James Maxwell Proudfit,
Frank Adgate Quail,
John Francis Quinlin,
Jesse Albert Rapley,
Calvin Edgar Reed,
Robie Lewis Reid,
Crawford Scott Reilley,
Oliver Samuel Riggs,
William Vance Rinehart, Jr.,
Will E. Ryan,
Fred Alfred Sabin,
Charles Alexander Salyer,
Archibald S. Sands,
Albert Edward Seaman,
Mark Roger Sherman,
Robert Lee Simpson,
George Preston Smith,
Will Jackson Stanton,
LaVergne Belden Stevens,
Morton Edwin Stevens,
George Stoneman, Jr.,
Douglas Jerrold Sullivan,
Reitaro Takano,
Samuel Lennon Thompson,
Richard Marvin Turner,
Nathan Edwin Van Tuyl,
Charles William Vermillion,
Charles Winfield Waterman,
Morris Benjamin Wells,
Thomas Henry Wheeler,

Albert Stanton White,
Charles William White,
Orlando Blodgett Willcox,
Samuel Law Wilson,
Melvin Leonard Wines,
Alva Firman Wingert,

Edward Emmert Wingert,
Frederick William Wollner,
Richard Shedrach Woodliff,
Samuel Marshall Wright,
William Trott Wynkoop,
Henry Martin Young,

Oscar Robert Zipf.

PHARMACEUTICAL CHEMIST.

Charles Coy Abbey,
Harry Andrews Allshouse,
James Edward Allworth,
Benjamin Thomas Barry,
Leo Prosper Block,
Edwin Timothy Boden,
Thomas Worthington Bowen,
Fred J. Chamberlin,
Starr King Church,
Charles Felix Crowley,
William LeRoy Dunn,
Julia Esther Emanuel,
Merrill Stanton Flint,
Henry Franz,
John Henry Frost,
Truman Griffen,
Rolla Morgan Heath,
Bernhard Conrad Hesse,
George Jacob Hirth, Jr.,
Russell Lowell Janney,

Christian Gottlieb Jenter,
Burt Lemuel Johnson,
Franklin Ross Keith,
William Carl Kirchgessner,
Leonard George Kramer,
William Henry Krug,
William Squire Lockwood,
Fred William Mehlhop,
Firdinand Edmund Parkinson,
Mark Rockwell,
Charles William Rowland,
George Michigan Shettler,
Oscar John Smith,
Louis Joseph Spenker,
John Thompson,
Harry Simmons VanEtta,
Albert Frederick Vogel,
Matthew Weightman, Jr.,
William Clapp Wheelock,
Joseph Baldwin Wood,

August Charles Zeig.

DOCTOR OF MEDICINE.

(HOMŒOPATHIC MEDICAL COLLEGE.)

Sara Bartlett Armstrong,
James Nelson Ayres,
Elizabeth Stacy Carey,
Albert Britton Clark,
Roy Samuel Copeland,
William A. Cotton,
Sallie Maria Davis,
Denias Dawe,
Walter Newton Fowler,
Cora Yan Hill,

Charles Albert Macrum,
James Archie McLachlan,
Laban Henry Shank,
Walter Longyor Slack,
Rollin Howard Stevens,
William Isaac Tyler,
Boyle Vance,
Annette Haseltine Wheelock,
Jerome Bonaparte Wheelock,
Eli Cone Williams,

Miranda Poyer Wiswell.

DOCTOR OF DENTAL SURGERY.

Albert Edward Anderson,
Robert Burns Avery,
Harry Fielden Briggs,
Frank Seldon Buckley,
Charler Sumner Buttolph,
George Benton Chester,
George Edward Courtney,
Harry Goodrich Dunaven,
Louis Phillips Hall,
Frank Douglass Harding,
George Byron Hayes,
Clarence Eugene Henderson,
William Carley Herbert,
George Arthur Holliday,
Horace Nathaniel Holmes,
Edy Randall Johnson,
Jacob William Jungman,

Oscar Calm Kerlin,
Reuben John Kirk,
Charles Shuter McIndoe,
Edward Cook Mills,
Frank E. Morey,
Charles Franklin Noyes,
Arthur Mowry Potter,
John Scott Rice,
Arthur Richardson,
Sumner Oliver Sawyer,
Henry Herman Schuhmann,
DeWitt Spalsbury,
Carroll Wesley Staples,
Griffith Pritchard Terry,
Frank Prescott Watson,
Joe Welch,
John H. Williams.

HONORARY DEGREES.

DOCTOR OF LAWS.

EDWARD HOWELL HORTON,
Chief Justice of the Supreme Court of Kansas.

ELISHA WILLIAMS MCKINSTRY,
Professor in the Hastings College of Law in the University of California.

MARTIN LUTHER D'OOGHE,
Professor in the University of Michigan.

CATALOGUE
— OF —
FACULTIES AND STUDENTS
FOR THE YEAR 1889-90.

DEPARTMENT
— OF —
Literature, Science, and the Arts.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

* HENRY S. FRIEZE, LL. D.,

DEAN.

ALBERT B. PRESCOTT, PH. D., M. D.,

REV. MARTIN L. D'OOGHE, LL. D.,

CHARLES E. GREENE, A. M., C. E.,

WILLIAM H. PETTEE, A. M.,

MARK W. HARRINGTON, A. M.,

JOSEPH B. STEERE, PH. D.,

EDWARD L. WALTER, PH. D.,

ALEXANDER WINCHELL, LL. D.,

ISAAC N. DEMMON, A. M.,

ALBERT H. PATTENGILL, A. M.,

MORTIMER E. COOLEY, M. E.,

WOOSTER W. BEMAN, A. M.,

VICTOR C. VAUGHAN, PH. D., M. D.,

* Deceased.

THOMAS M. COOLEY, LL. D.,
 CHARLES S. DENISON, M. S., C. E.,
 HENRY S. CARHART, A. M.,
 RAYMOND C. DAVIS, A. M.,
 VOLNEY M. SPALDING, A. B.,
 HENRY C. ADAMS, PH. D.,
 CALVIN THOMAS, A. M.,
 BURKE A. HINSDALE, PH. D.,
 RICHARD HUDSON, A. M.,
 ALBERT A. STANLEY,
 JOHN DEWEY, PH. D.,
 FRANCIS W. KELSEY, PH. D.,
 OTIS C. JOHNSON, PH. C., A. M.,
 PAUL C. FREER, PH. D., M. D.,
 WILLIAM H. HOWELL, PH. D.,
 JOSEPH B. DAVIS, C. E.,
 ANDREW C. McLAUGHLIN, A. B.,
 P. R. DE PONT, A. B., B. S.,

REGISTRAR.

LEO D. MINER,
 CLARENCE G. TAYLOR, B. S.,
 JACOB E. REIGHARD, PH. B.,
 THOMAS C. TRUEBLOOD, A. M.,
 GEORGE HEMPL, PH. D.,
 FRANK N. COLE, PH. D.,
 FREDERICK G. NOVY, M. S.,
 ALEXANDER F. LANGE, A. M.,
 WILLIAM W. CAMPBELL, B. S.,
 ALEXANDER ZIWET, C. E.,
 GEORGE W. WHYTÉ, B. S.,
 JOSEPH H. DRAKE, A. B.,
 LEWIS A. RHOADES, A. M.,
 CHARLES K. MCGEE, A. B.,
 PHILIPPE B. MARCOU, PH. D.,
 CHARLES W. BELSER, A. B.,
 JAMES H. TUFTS, A. B., B. D.,
 FRANK C. SMITH, B. S.,
 GEORGE W. PATTERSON, A. B., S. B.,
 FRED N. SCOTT, PH. D.,
 MELLEN W. HASKELL, PH. D.,
 WILLIAM J. HUSSEY, B. S.

JOHN W. LANGLEY, S. B., M. D.,

Non-Resident Lecturer on the Metallurgy of Steel.

OTHER INSTRUCTORS AND ASSISTANTS.

FREDERICK C. HICKS, A. M.,
 ALICE HUNT,
 DEAN C. WORCESTER, A. B.,
 FRED MORLEY, B. S.,
 FRANCIS W. BREWER, M. D.,
 LOUIS C. HILL, B. S.

STUDENTS.*

CANDIDATES FOR AN ADVANCED DEGREE, AND OTHER
RESIDENT GRADUATES.

NAME.		RESIDENCE.
Hajop Harutune Arterian, A. B., Bates College.	U. (6)	North Anson, Me.
Ephraim Douglass Adams, A. B., Wirt McGregor Austin, Ph. B.,	U. (5)	Eldora, Ia. Lapeer.
Benjamin Parsons Bourland, A. B., Edson Pratt Bradley, A. B.,	U. (1)	Peoria, Ill. Reading.
Fred Converse Clark, A. M., Allen Lysander Colton, Ph. B.,	U. (5)	Ann Arbor. Ann Arbor.
Nathan Davis Corbin, B. S.	U. (5)	Ann Arbor.
† Herbert Fletcher DeCou, A. B., Samuel Medary Dick, A. B., Ohio Wesleyan University.	U. (1) U. (6)	Detroit. Columbus, O.
Benjamin Leonard D'Ooge, A. M.,	U. (1)	Ypsilanti.

* NOTE.—The following is the explanation of the letters and figures set against the students' names:

The letters in the column under the heading DEGREE show for what degree a student working on the credit system is a candidate; but when found opposite the name of a student pursuing the university system they indicate rather the direction in which such student is working than the degree which he may ultimately take. The figures under the heading COURSES show the number of Full Courses taken prior to the beginning of the current academic year 1889-90, and completed without conditions. By a Full Course is meant the equivalent of five exercises a week during a semester. The abbreviation U. means university system (see page 77). The figures from 1 to 10 in parenthesis indicate the group in which the chief studies of the person are found, as follows: (1) Ancient Languages and Literatures, (2) Mathematics, (3) Modern Languages and Literatures, (4) English Literature and Rhetoric, (5) History and Political Science, (6) Philosophy and the Fine Arts, (7) Physical Sciences, (8) Astronomy, (9) Geology, Zoology, and Botany, (10) Engineering.

† Holder of Elisha Jones Classical Fellowship.

180 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	RESIDENCE.
George Shepard French, B. S., Michigan Agricultural College.	<i>Lansing.</i>
Frederick Sherburne Gaige, M. S., Hillsdale College.	<i>Ann Arbor.</i>
Elsie Hadley, B. S., Earlham College.	U. (2) <i>Coldwater.</i>
Belva Mary Herron, B. L.,	<i>Mexico, Mo.</i>
Frederick Charles Hicks, A. B.,	U. (5) <i>Ann Arbor.</i>
Louis Clarence Hill, B. S. (C. E.),	<i>Detroit.</i>
William James Hinkson, B. S., Michigan Agricultural College.	<i>Amadore.</i>
Mary Louisa Hinsdale, A. B., Adelbert College.	U. (5) <i>Ann Arbor.</i>
Ruth Hoppin, A. M., Oberlin College.	<i>Moore Park.</i>
Fayette Hurd, A. M.,	U. (1) <i>Ann Arbor.</i>
William Thaddeus Keating, A. B., St. Ignatius College.	<i>Elgin, Ill.</i>
Marietta Kies,	U. (6) <i>Danielsonville, Conn.</i>
Ella Adelaide Knapp, A. B., Kalamazoo College.	U. (4) <i>Kalamazoo.</i>
David Martin Lichty, B. S., West Chester State Normal School.	U. (7) <i>Goodville, Pa.</i>
Ormond Oscar Lyons, A. B., Acadia College.	U. (1) <i>Waterville, Nova Scotia.</i>
William Clarence McCollough, A. B., Butler University.	U. (1) <i>LaFayette, Ind.</i>
Lucy Castiny McGee, B. S., Iowa Wesleyan University.	U. (4) <i>Leadville, Col.</i>
Caroline Miles, A. B., Earlham College.	U. (6) <i>Carthage, Ind.</i>
Fred Morley, B. S. (C. E.),	U. (10) <i>Ann Arbor.</i>
Lewis Murbach, Ph. B.,	<i>Riga.</i>
Edward Joseph Murphy, A. B., St. Ignatius College.	<i>Chicago, Ill.</i>
Mary Chilton Noyes, Ph. B., Iowa State University.	U. (9) <i>Minneapolis, Minn.</i>
Harvey Newton Ott, Ph. B., Albion College.	U. (9) <i>Albion.</i>
William Francis Palmer, A. B., Baldwin University.	U. (1) <i>West Richfield, O.</i>
Henry Alvin Parker, Ph. B., Hillsdale College.	U. (4) <i>Hillsdale.</i>
Flora Mabel Potter, A. B.,	U. (4) <i>Niles.</i>
Verna Evangeline Sheldon, A. B., Wellesley College.	U. (6) <i>Chicago, Ill.</i>
Will Hittell Sherzer, B. S.,	U. (9) <i>Saginaw.</i>

NAME.		RESIDENCE.
David Wendel Spence, B. S., University of Texas.	U. (10)	Austin, Tex.
Clement Richilieu Stickney, A. B.,		Ann Arbor.
Eliza Read Sunderland, Ph. B.,	U. (6)	Ann Arbor.
Ada Knight Terrell, Ph. B., State University of Iowa.		Stanley, Ia.
Henry Thurtell, B. S., Michigan Agricultural College.		Agricultural College.
*Arlisle Margaret Young, A. B.,	U. (4)	Grand Rapids.

The following students enrolled in other departments of the University are also candidates for an advanced degree in the Department of Literature, Science, and the Arts. (See page 79.)

Enrolled in Department of Medicine and Surgery.

Guy Lincoln Kiefer, A. B.,	U. (9)	Detroit.
John David Riker, B. S. (Chem.),	U. (7)	Ann Arbor.
Aldred Scott Warthin, A. B., University of Indiana.	U. (4)	Indianapolis, Ind.

Enrolled in Department of Law.

Frederick Augustus Henry, A. B., Hiram College.	U. (6)	Geauga Lake, O.
Clyde Vallandigham Nafe, A. B.,	U. (6)	Rochester, Ind.
Harmon Chamberlin St. Clair, B. L.,	U. (5)	Bay City.

GRADUATES STUDYING *IN ABSENTIA* FOR MASTER'S DEGREE,
AND FOR DEGREE OF MINING ENGINEER.

NAME.		RESIDENCE.
Virginia Beauchamp, A. B.,	U. (1)	Colorado Springs, Col.
Louis Begemann, B. S.,	U. (7)	Corydon, Ia.
Elizabeth Rebecca Clark, A. B.,	U. (4)	Lakeville, N. Y.
Charles Horton Cooley, A. B.,	U. (5)	Ann Arbor.
Charles Hall Cook, A. B.,	U. (5)	Auburn, Cal.
Joseph Villiers Denney, A. B.,	U. (5)	Aurora, Ill.
William Worth Eagan, Ph. B.,	U. (1)	Ann Arbor.
Ellen Elizabeth Garrigues, A. B.,	U. (4)	Ann Arbor.
John Hubert Greusel, B. L.,	U. (5)	Detroit.
Jonathan Heaton, A. B.,	U. (5)	Virginia City, Mon.
Elmer Ellsworth Hubbard, A. B.,	U. (4)	Tyotsu, Japan.
Florence Bingham Kinne, A. B.,	U. (4)	Romeo.
Hein Lankheet, B. S.,	U. (7)	Allegan.

* Holder of Fellowship of the Association of Western Collegiate Alumnae.

182 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.		RESIDENCE.
William Andrew McAndrew, A. B.,	U. (4)	Hyde Park, Ill.
Dora Kennedy Matthews, B. L.,	U. (4)	Grand Rapids.
Robert Webber Moore, Ph. B.,	U. (3)	Strasburg, Germany.
John Oren Reed, Ph. B.,	U. (7)	East Saginaw.
Harold Remington, A. B.,	U. (5)	Washington, D. C.
Chester Harvey Rowell, Ph. B.,	U. (6)	Washington, D. C.
George Frederick Rush, A. B.,	U. (5)	Chicago, Ill.
Lillian Maria Shaw, A. B.,	U. (1)	East Saginaw.
James Lincoln Skinner, B. S.,	U. (5)	Mt. Pleasant.
Effie Almira Southworth, B. S.,	U. (9)	Washington, D. C.
Frank Clemes Smith, B. S. (M. E.),	U. (10)	Ann Arbor.
Fred Bernard Spaulding, A. B.,	U. (5)	Charlotte.
Henry Silas Tibbits, A. B.,	U. (6)	Racine, Wis.
Charles Orrin Townsend, B. S.,	U. (9)	Annapolis, Md.
James A. Wardlow, A. B.,	U. (6)	Pierce City, Mo.
Frank Enos Welch, A. B.,	U. (3)	Trinity College, N. C.
Chauncey Alvan Wheeler, A. B.,	U. (4)	Chicago, Ill.
Elmer Grant Willyoung, B. S.,	U. (7)	Detroit.
Horace Vaughn Winchell, B. S.,	U. (9)	Minneapolis, Minn.
Bertha Hammond Wright, A. B.,	U. (4)	Ann Arbor.

CANDIDATES FOR A DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Anna Howard Adams,	Ph. B.	20	Ann Arbor.
Mary Joice Adams,	Ph. B.		Normal, Ill.
Charles Town Alexander,	B. L.	18 4-5	Grosse Isle.
Fred Alexander,	A. B.		Detroit.
John Burns Alexander,	B. S.	19 3-5	Buchanan.
Hilah Lockwood Allen,	B. L.	13 2-5	Portland.
John Robins Allen,	B. S. (Mech. E.)	6	Milwaukee, Wis.
Josephine Allen,	B. L.		Ottawa, O.
Nellie Keech Allen,	B. S.		Ann Arbor.
Elmer Louis Allor,	B. S. (C. E.)	7 2-5	Mt. Clemens.
Katharine Sprague Alvord,	A. B.		Sandusky, O.
Loowina Hattie Amberg,	B. L.	3 2-5	Battle Creek.
Robert Lewis Ames,	B. S. (Mech. E.)		Pokagon.
Charles Samuel Amos,	Ph. B.	6 1-5	Chicago, Ill.
Charles Duncan Anderson,	B. L.		Pontiac.
Duncan Anderson, Jr.,	B. S. (Chem.)		Ogdensburg, N. Y.
Frank Anderson,	B. S. (C. E.)	21	Salt Lake City, Utah.
Lucy Sadie Andrews,	B. L.		East Saginaw.
William Holmes Andrews,	Ph. B.		Canandaigua, N. Y.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Frederick Robert Angell,	B. S.	4 1-5	<i>Oak Park, Ill.</i>
James Rowland Angell,	A. B.	18 3-5	<i>Ann Arbor.</i>
Cora Deette Apthorp,	B. L.	1 3-5	<i>Big Rapids.</i>
Franc Arnold,	Ph. B.	19 1-5	<i>Allegan.</i>
Clifford Glasgow Arthur,	B. L.	4	<i>Decatur, Ill.</i>
Frank Riley Ashley,	B.S.(Chem.)	12 4-5	<i>Denver, Col.</i>
Charles Gillman Atkins,	B. S. (Mech. E.)		<i>Tiffin, O.</i>
Edith Emma Atkins,	A. B.	17 2-5	<i>Ann Arbor.</i>
Lena C. Austin,	B. S.		<i>Ann Arbor.</i>
Paul Frederick Bagley,	B. S.		<i>Detroit.</i>
Ruth Gertrude Bagley,	A. B.		<i>Detroit.</i>
Anna Bailey,	A. B.	8	<i>Battle Creek.</i>
Anna May Bailey,	B. L.		<i>Tecumseh.</i>
Frank Seymour Baillie,	B.S.(C.E.)	23 2-5	<i>Ann Arbor.</i>
Warren Dwight Baker,	A. B.		<i>Buchanan.</i>
Glen Edward Balch,	B.S.(C.E.)	6 3-5	<i>Kalamazoo.</i>
Hadley Baldwin,	B.S.(C.E.)		<i>Doe Run, Pa.</i>
Walter John Baldwin,	B.S.(C.E.)	24 4-5	<i>Romansville, Pa.</i>
William Dearborn Ball,	B.S.(E.E.)	21 1-5	<i>Ann Arbor.</i>
Emma McAllan Ballentine,	A. B.	14 1-5	<i>Port Huron.</i>
Mary Clark Bancker,	Ph. B.	13 2-5	<i>Jackson.</i>
Arthur Hurd Bannon,	Ph. B.	20	<i>Portsmouth, O.</i>
Grant S. Barber,	B. S.	20 2-5	<i>Ann Arbor.</i>
Claribel Ruth Barnett,	Ph. B.		<i>Kent, O.</i>
Fanny Barnett,	A. B.		<i>Kent, O.</i>
Thomas Edison Barnum,	B.S.(E.E.)	6 1-5	<i>Port Huron.</i>
Charles James Barr,	Ph. B.	6	<i>Aurora, Ill.</i>
Mary Sophie Barry,	A. B.	17	<i>Galena, Ill.</i>
William Bassett,	B.S.(Mech.E.)	4 3-5	<i>Ann Arbor.</i>
Harry Moore Bates,	Ph. B.	U. (5)	<i>Chicago, Ill.</i>
William Frederick Baur,	Ph. B.		<i>Ann Arbor.</i>
Myra Beach,	B. L.	3 3-5	<i>Battle Creek.</i>
Elmer Emery Beal,	B.S.(Mech.E.)	1 3-5	<i>Ann Arbor.</i>
Arthur Plympton Beardsell,	B.S.(E.E.)	1 3-5	<i>Hudson.</i>
Edward Scott Beck,	A. B.		<i>Holton, Kan.</i>
Archibald Lachlan Becker,	B. S. (Mech. E.)		<i>Hesperia.</i>
Alice Whitney Beckwith,	B. L.	1 3-5	<i>Ann Arbor.</i>
Maude Benjamin Bedell,	Ph. B.		<i>Jackson.</i>
Theressa Grace Bedford,	Ph. B.		<i>Detroit.</i>
Fern Amelia Beebe,	Ph. B.		<i>Big Rapids.</i>
Ira Charles Belden,	Ph. B.		<i>Kaneville, Ill.</i>
Charles Coleman Benedict,	A. B.		<i>Lebanon, O.</i>
Elbert King Benedict,	Ph. B.	6	<i>Manistee.</i>
Dora Bennett,	A. B.	21 3-5	<i>Franklin, O.</i>

184 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Flora Bennett,	A. B.	18	Franklin, O.
James O'Donnell Bennett,	A. B.	2-5	Jackson.
Mary Ella Bennett,	Ph. B.		Ann Arbor.
Andrew Renick Benson,	B.S.(C.E.)	19 4-5	Ann Arbor.
Allan Beach Bevans,	B. L.	5 1-5	Decatur, Ill.
Mortimer Osborne Bigelow,	B.S.(C.E.)	6	Birmingham.
James Pyper Bird,	A. B.		Ann Arbor.
William Warner Bishop,	A. B.	4	Detroit.
Charles Luther Blodgett,	A. B.	3	Eaton Rapids.
Mamah Bouton Borthwick,	A. B.	6 2-5	Oak Park, Ill.
Flora Helena Bourns,	B. L.		Ann Arbor.
Frank Swift Bourns,	B. S.	17 4-5	Ann Arbor.
Charles Ambrose Bowen,	A. B.		Marathon, O.
Ralph Robinson Bradley,	B. L.	4 1-5	Hinsdale, Ill.
George Russel Brandon,	B.S.(Mech.E.)	16 4-5	Detroit.
James Fleming Breakey,	B. S.	4 3-5	Ann Arbor.
Robert John Brennan,	B.S.(C.E.)		Mt. Clemens.
Marie Salisbury Brewer,	B. L.		Owosso.
Sherman Selah Brewster,	B.S.(C.E.)		Hanover.
Mary Blanche Briggs,	B. L.	21 1-5	Battle Creek.
John Jerome Brinckerhoff,	B. I.		Joliet, Ill.
Christine Frederica Bronson,	Ph. B.		Orchard Lake.
Albert Sidney Brown,	A. B.	8 2-5	Chicago, Ill.
Mary Barbour Brown,	B. L.	19 1-5	St. Matthews, O.
Sally Brown,	B. L.	19	St. Matthews, O.
William Simon Brown,	B. S.	11	Elgin, Ill.
Benjamin Franklin Buck,	A. B.		Ypsilanti.
Minnie Thornton Buick,	B. L.	12 3-5	Detroit.
Harry Conant Bulkley,	A. B.	5 3-5	Monroe.
Phebe Josepha Bullock,	A. B.	U. (1)	East Saginaw.
Gertrude Mary Bundy,	A. B.	5 4-5	Chicago, Ill.
Cameron Clarke Burns,	A. B.		Kalamazoo.
Fitzhugh Burns,	A. B.	6 2-5	Kalamazoo.
George W. Burt,	B.S.(Mech.E.)		Armington, Ill.
Henry Magnus Butzel,	Ph. B.	12	Detroit.
Fred George Cadwell,	A. B.	10	Adrian.
Mary Victoria Cady,	A. B.	19 2-5	Ypsilanti.
Margaret Marsh Cahill,	B. S.		Lansing.
Maude Elaine Caldwell,	Ph. B.		Fremont, O.
Alfred Stone Calkins,	B.S.(C.E.)	12 1-5	Allegan.
Katherine Barker Camp,	B. S.		Sandusky, O.
Elizabeth Alma Campbell,	Ph. B.	10 4-5	Ann Arbor.
Harriet Lee Campbell,	Ph. B.		Hanover, N. H.
Katherine Campbell,	A. B.	16 2-5	Ypsilanti.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Mattie Ormsby Campbell,	B. S.		<i>Ann Arbor.</i>
Harry Ernest Candler,	B. S.	5 2-5	<i>Detroit.</i>
Irving Dallas Carpenter,	B.S.(C.E.)	8 1-5	<i>Battle Creek.</i>
May Carpenter,	Ph. B.	5 4-5	<i>Alpena.</i>
Iris Carr,	B. L.		<i>Ann Arbor.</i>
Lewis Clinton Carson,	A. B.	8	<i>Detroit.</i>
Martha Anna Catton,	Ph. B.	19 1-5	<i>Perry, N. Y.</i>
Martha Holway Chadbourne,	Ph. B.		<i>Vinton, Ia.</i>
Theodore Lincoln Chadbourne,	B. S.	13 2-5	<i>Vinton, Ia.</i>
William Stewart Chandler,	B.S.(C.E.)	7 2-5	<i>Coldwater.</i>
Harry Oliver Channon,	B.S.(E.E.)	3-5	<i>Quincy, Ill.</i>
Glenn Laverne Chapman,	B. L.	5 1-5	<i>Lansing.</i>
Willie Herbert Charnley,	Ph. B.		<i>Goshen, Ind.</i>
Dwight Bissell Cheever,	B. S.	15	<i>Ann Arbor.</i>
William Sylvester Cheever,	B. L.		<i>Ann Arbor.</i>
Edwin Henry Cheney,	B.S.(E.E.)	4	<i>Detroit.</i>
George Parkhurst Cheney,	B. L.	5 3-5	<i>Aurora, Ill.</i>
Gaylord Hammond Chilcote,	B. L.	5 1-5	<i>Rensselaer, Ind.</i>
James Edward Church, Jr.,	B. S.	5 2-5	<i>Holly.</i>
Albert Loring Clark,	B.S.(Mech.E.)	2 2-5	<i>Ann Arbor.</i>
Eda May Clark,	B. L.	13 3-5	<i>Ann Arbor.</i>
Lucy Durfee Clark,	A. B.	10 1-5	<i>Lakeville, N. Y.</i>
Frederick Marshall Clarke,	B.S.(E.E.)	17	<i>Dubuque, Ia.</i>
Stanton Walter Clarke,	Ph. B.	20 1-5	<i>May.</i>
Francis Warfield Clay,	B.S.(C.E.)	6 1-5	<i>Ann Arbor.</i>
Holbrook Gibson Cleaveland,	A. B.		<i>Plymouth, Ind.</i>
Henry Lawrence Cleverdon,	B.S.(C.E.)		<i>Galion, O.</i>
Warren John Clough,	A. B.	14	<i>Kalamazoo.</i>
Benjamin Cluff, Jr.,	B. S.	19	<i>Provo City, Utah.</i>
Lucie Ellen Clute,	B. L.		<i>Ionia.</i>
William Gibson Cockburn,	A. B.	18 1-5	<i>Galesburg.</i>
George Pierre Codd,	A. B.	13 3-5	<i>Detroit.</i>
Edwin Raymond Cole,	B. L.	5 3-5	<i>Watrousville.</i>
Lawrence Thomas Cole,	A. B.	5 3-5	<i>Ann Arbor.</i>
William Henry Cole,	B. L.	4	<i>Hinsdale, Ill.</i>
Mary Clara Colver,	B. L.		<i>Sandusky, O.</i>
Lucy Theodora Comstock,	Ph B.		<i>Owosso.</i>
William Cole Conant,	B.S.(Mech.E.)		<i>Oak Park, Ill.</i>
Ettie Connor,	B. L.		<i>West Bay City.</i>
Rowland Manley Connor,	B. S.		<i>East Saginaw.</i>
Ernest Ben Conrad,	B.S.(Mech.E.)	20 4-5	<i>Ann Arbor.</i>
Lola Helen Conrad,	B. S.	2-5	<i>Ann Arbor.</i>
Harrison Earle Cook,	A. B.	5 4-5	<i>Adrian.</i>
Marguerite Bammel Cook,	B. L.	10	<i>Ann Arbor.</i>

186 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Willis Gurdon Cook,	B. S.	13 3-5	<i>Grand Blanc.</i>
Thomas Benton Cooley,	A. B.	14 1-5	<i>Ann Arbor.</i>
Edwin Marion Coolidge,	B.S.(Mech.E.)	20 1-5	<i>Winnebago, Ill.</i>
Lucy Coolidge,	Ph. B.	13 2-5	<i>Bloomington, Ill.</i>
Genevieve Cornwell,	B. S.	1 1-5	<i>Ann Arbor.</i>
Isabella Cottrell,	B. S.	3-5	<i>Flint.</i>
Arthur Howe Covert,	B. S.	3 2-5	<i>Ann Arbor.</i>
Thomas Luther Craig,	B.S.(E.E.)		<i>Ann Arbor.</i>
Alice Doris Cramer,	Ph. B.	1 2-5	<i>Ann Arbor.</i>
Katherine Cramer,	Ph. B.	5 4-5	<i>Ann Arbor.</i>
Augustus Warren Crane,	B. S.		<i>Adrian.</i>
Loretta Crissman,	Ph. B.	20 4-5	<i>Romeo.</i>
James Moseley Crosby,	B.S.(Mech.E.)	13	<i>Grand Rapids.</i>
Joseph Sherman Crowther,	B.S.(C.E.)	5 2-5	<i>Battle Creek.</i>
Henry LeRoy Crummer,	Ph. B.		<i>Omaha, Neb.</i>
William Ernest Cullen,	A. B.		<i>Helena, Mon.</i>
Edward Page Cummings,	B. L.		<i>Grand Haven.</i>
William John Currer,	B.S.(C.E.)		<i>Chicago, Ill.</i>
Heber Doust Curtis,	A. B.	2 1-5	<i>Detroit.</i>
George Sears Curtiss,	A. B.	14	<i>Geneseo, N. Y.</i>
Sylvanus Wright Curtiss, Jr.,	Ph. B.	6 1-5	<i>Monroe.</i>
Walter Adams Cutler,	A. B.		<i>Ashtabula, O.</i>
Alice Harper Damon,	A. B.	18 3-5	<i>Concord, Mass.</i>
Eleazer Darrow,	B.S.(E.E.)	7 1-5	<i>Cincinnati, O.</i>
Thomas Frederick Davies, Jr.,	A. B.		<i>Detroit.</i>
Jasper Case Davis,	B. L.	1 3-5	<i>Lansing.</i>
George Lawrence Davison,	B. L.	1 2-5	<i>Joliet, Ill.</i>
Paul Marley Day,	Ph. B.	1 2-5	<i>Detroit.</i>
Cora Armenia Deake,	A. B.	21 1-5	<i>South Lyon.</i>
Elizabeth Whetten Dean,	B. S.	12 3-5	<i>Ann Arbor.</i>
Frank Decke,	B. L.	1 3-5	<i>Lansing.</i>
Louis Vincent De Foe,	B. L.	14	<i>Adrian.</i>
William Henry Dellenback,	Ph. B.	6 2-5	<i>Hinckley, Ill.</i>
Henry Henderson Denham,	B.S.(Chem.)		<i>Flint.</i>
Charles Arza Denison,	B. L.	5 4-5	<i>Decatur, Ill.</i>
Ernest J. Dennen,	A. B.		<i>Ann Arbor.</i>
Henry Bingham Dewey,	A. B.	19 4-5	<i>Owosso.</i>
Freeland Samuel Dibble,	Ph. B.		<i>Ann Arbor.</i>
Mary Cynthia Dickerson,	B. L.	9 2-5	<i>Grand Rapids.</i>
Melzar Monroe Dickson,	B. L.		<i>Marshalltown, Ia.</i>
Henry Perkins Dodge,	B.S.(Mech.E.)		<i>Toledo, O.</i>
Fay Donaldson,	A. B.		<i>Pontiac.</i>
William Henry Dorrance,	B.S.(Mech.E.)	6 4-5	<i>Ann Arbor.</i>
Edgar Millard Doughty,	A. B.	18	<i>Matteawan, N. Y.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Robert Woodin Doughty,	A. B.	5	Matteawan, N. Y.
Henry Woolsey Douglas,	B.S.(Mech.E.)	19 3-5	Ann Arbor.
Stephen Arnold Douglas,	B. L.		Plain City, O.
Earle Wilbur Dow,	A. B.	13 1-5	Bellefontaine, O.
Mary Edna Dowdigan,	Ph. B.	19 1-5	Ann Arbor.
James Shelby Downard,	B. L.		Wapakoneta, O.
Charles Drake,	B. S.		Rochester, Ind.
Genevieve Catherine Duffy,	A. B.		Ann Arbor.
James Eugene Duffy,	B. L.	17 3-5	Ann Arbor.
Robin Ernest Dunbar,	Ph. B.	21	South Bend, Ind.
John Denison Evarts Duncan,	B.S.(E.E.)	1 3-5	Ann Arbor.
Nellie Phoebe Dunham,	B. L.		Monticello, Ia.
Frederick Levy Dunlap,	B.S.(Chem.)		Chillicothe, O.
Grant Henry Dunning,	B.S.(C.E.)	5	Pettysville.
Augusta Hall Durfee,	A. B.		Detroit.
Irving William Durfee,	Ph. B.	5 2-5	Plymouth.
Ruth Bertha Durham,	B. S.	4	Ann Arbor.
George Burlingame Dygert,	Ph. B.		Ann Arbor.
Jennie Eddy,	Ph. B.		Michigan City, Ind.
Martha Florence Eddy,	Ph. B.	6 2-5	Kewanee, Ill.
Edwin Hugh Edwards,	B. S.	6 2-5	Winnebago, Ill.
John Robert Effinger, Jr.,	Ph. B.	12 3-5	Chicago, Ill.
Dora Deett Elmer,	Ph. B.		Mason.
Anna Fleming Embree,	B. L.		Princeton, Ind.
Bert George Escott,	B.S.(E.E.)		Big Rapids.
Albert Chauncey Eycleshymer,	B.S.(Bio.)	22 2-5	Hastings.
Harold Wellman Fairbanks,	B. S. U.	(9)	San Diego, Cal.
Eugene Gerald Fassett,	B. S.	6 1-5	Chicago, Ill.
Raymond Marshall Ferguson,	B. L.		Middleville.
James Edward Ferris,	Ph. B.	4	Toledo, O.
Henry George Field,	B.S.(E.E.)	6 1-5	Detroit.
Nelson Curtis Field,	A. B.		Glenwood, Ia.
Charles Adam Fisher,	B.S.(C.E.)	16 3-5	Pontiac.
Fred Charles Fisher,	B.S.(C.E.)	5 1-5	Lake Linden.
Will John Fisher,	B.S.(E.E.)	1 3-5	Pontiac.
George Mygatt Fisk,	A. B.	19 2-5	Ashtabula, O.
George Everett Fitch,	B.S.(Mech.E.)	5	Grand Rapids.
Ida Bertha Paulina Fleischer,	Ph. B.		Saginaw.
Marie Fleming,	A. B.	9 4-5	Ann Arbor.
Walter Alexander Forbes,	Ph. B.		Rockford, Ill.
Grant Martin Ford,	A. B.	20 1-5	Chicago, Ill.
Maude Forhan,	B. L.	7 4-5	East Saginaw.
Edward John Fowler,	B.S.(Mech.E.)		Chicago, Ill.
Herbert Fox,	Ph. B.		La Porte, Ind.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Clyde Waldin Francis,	B. S.		Nashville.
Arthur Frantzen,	B.S.(C.E.)	6	Chicago, Ill.
Joseph Kendall Freitag,	B.S.(C.E.)	19 2-5	New York, N. Y.
Henry Harrison Fridline,	A. B.	14 3-5	Jeromeville, O.
Carl Kimball Friedman,	B.S.(C.E.)	12 2-5	Detroit.
Henry Arthur Friedman,	Ph. B.		Muskegon.
Isaac Kahn Friedman,	Ph. B.		Chicago, Ill.
Herbert Martin Frost,	A. B.	17 2-5	Ann Arbor.
Minnie Frost,	Ph. B.	4	Lake View, Ill.
Thomas Cooper Fulton,	B.S.(Bio.)		Pittsburgh, Pa.
Louis Lyon Galbraith,	Ph. B.		Mt. Morris, N. Y.
Philip Stimson Gardiner,	B. S.		Lyons, Ia.
Charles Byron Garrison,	A. B.	19 2-5	Vernon.
Ralph Stillman Garwood,	A. B.	3 1-5	Ann Arbor.
Winthrop Enoch Gastman,	B.S.(Mech.E.)	20 1-5	Decatur, Ill.
George Irving Gavett,	B.S.(C.E.)	1 3-5	Sandstone.
Edwin Francis Gay,	A. B.	21 4-5	Ann Arbor.
Truman Penfield Gaylord,	B. S.(Mech. E.)		Shelby.
Ruth Gentry,	Ph. B.	19 1-5	Stilesville, Ind.
John Evans Gernand,	B. L.	21 3-5	Rossville, Ill.
Ellen Champney Gibson,	A. B.		New Ipswich, N. H.
John Clayton Gifford,	B.S.(Bio.)	15 1-5	May's Landing, N. J.
Frank Rust Gilchrist,	B.S.(C.E.)		Alpena.
Hiram North Ernest Gleason,	B.S.(C.E.)	6 4-5	Sherman, N. Y.
Stephen Clifton Glidden,	B.S.(Mech.E.)		Burke, Idaho.
Jennie Grace Goble,	B. S.	7 3-5	Ann Arbor.
William Ellis Goddard,	Ph. B.	19 2-5	Lena, Ill.
Carlotta Goldstone,	Ph. B.		East Saginaw.
Moses Gomborg,	B. S.	19	Elisabethgrad, Russia.
Mertie Leora Goodell,	Ph. B.	12 4-5	Ann Arbor.
Louis Edward Gossman, LL. B.,	B. L.	17 4-5	Canton, Minn.
Frances Katherine Gould,	B. L.	5 4-5	Chesaning.
Herbert Jay Goulding,	B.S.(Mech.E.)	1 3-5	East Saginaw.
Eben Bailey Gower,	Ph. B.		Odell, Ill.
Jennie Mary Grace,	B. L.	6 1-5	Ann Arbor.
Ralph Krealing Gratigny,	B.S.(Mech.E.)		Cincinnati, O.
Alexander William Gravelle,	Ph. B.		Greenville.
Frank Burton Graves,	B.S.(C.E.)	7 3-5	Spokane Falls, Wash.
Frank Pliny Graves,	A. B.		Grand Rapids.
Paul Robert Gray,	A. B.	19 1-5	Detroit.
Frederick Dexter Green,	A. B.	6 2-5	Berlin Falls, N. H.
Charles Jason Greenstreet,	B.S.(Chem.)	18 4-5	Indianapolis, Ind.
Della Allen Gregory,	B. L.	19 2-5	Ann Arbor.
Lizzie Caroline Griffin,	B. L.	12	Bellefontaine, O.

NAME.	DEGREE.	COURSES.	RESIDENCE.
William Edgar Griffin,	Ph. B.	12 4-5	Wenona, Ill.
Leon Murdock Groesbeck,	B.S.(M.E.)		Kalamazoo.
Sam Bates Grubbs,	A. B.	6 1-5	Harrodsburg, Ky.
R. Prosper Gustin,	B.S.(C.E.)		Bay City.
Earl Woodford Hahn,	B. L.		Leslie.
Benjamin Franklin Hall, Jr.,	B. L.		Lansing.
Clemence Hamilton,	A. B.		Bellevue, O.
Walter John Hammill,	B. S.		Rockford, Ill.
Matthew Brown Hammond,	Ph. B.	12	South Bend, Ind.
Jacob Leonard Haner,	A. B.	22 3-5	Plain City, O.
Asa Herbert Hankerson,	B. L.	6 2-5	Caro.
Orville Richard Hardy,	B. L.	15 1-5	Montague.
Hubert Pickering Harmon,	B. S.(Mech.E.)		Chicago, Ill.
Grace Ella Harrah,	B. L.	20	Detroit.
Enoch Horton Harriman,	B. L.	4 4-5	Fenwick.
James Hugh Harris,	A. B.	13	Lake Linden.
Samuel Smith Harris,	A. B.	3-5	Detroit.
William Pickett Harris,	B. L.	17	Detroit.
Ray Hart,	B. L.		Midland.
Howard Davis Haskins,	A. B.		Cleveland, O.
Myrtie May Haskins,	B. L.		Bronson.
Grace Hastings,	B. S.	12 3-5	Sandusky, O.
Alice Emma Hatch,	B. L.	6 4-5	Bay City.
Helen Louise Hatch,	B. L.	13 4-5	Bay City.
Henry James Hatch,	B.S.(C.E.)	14 2-5	Jackson.
James Noble Hatch,	B.S.(C.E.)	7 1-5	Vacaville, Cal.
Hattie Vinette Haviland,	B. L.		Ann Arbor.
Jesse Albert Hawes,	B.S.(C.E.)		Parma.
Horace Walter Hawkins,	B. S.	6	Elgin, Ill.
Willis Boyd Hayes,	B.S.(C.E.)	19	Detroit.
Walter Edward Healy,	A. B.	6 4-5	Dundee, Ill.
Clarence Wright Heath,	B. L.		Benton Harbor.
Gisela Hegeler,	B. S.		La Salle, Ill.
Herman Hegeler,	B.S.(C.E.)		La Salle, Ill.
Myer L. Heidingsfeld,	Ph. B.		Greenfield, O.
Faith Helmer,	Ph. B.	19 2-5	Ann Arbor.
Russell Herley Hemley,	B.S.(Mech.E.)	5 2-5	Trenton, Mo.
David Bill Hempstead,	A. B.	19 1-5	Salt Lake City, Utah.
Percy Benjamin Herr,	Ph. B.	19 4-5	Chicago, Ill.
Carl William Hertel,	B.S.(E.E.)	8 2-5	Ann Arbor.
Charles Wardell Heywood,	A. B.	6 1-5	Irving Park, Ill.
Ida Z. Hibbard,	B. L.	14 2-5	Detroit.
George Oswin Higley,	B.S.(Chem.)	12 4-5	Gibbon, Neb.
Jonathan August Chas. Hildner,	A. B.	21 3-5	Detroit.

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Leonard Frederick Wm. Hildner,	A. B.	2	<i>Detroit.</i>
Charles Hill,	B. S.	12 2-5	<i>Creston, Ill.</i>
John Lewis Hill,	B.S.(C.E.)	6 2-5	<i>Ottawa, Ill.</i>
Theodore Henry Hinchman, Jr.,	A. B.	13 1-5	<i>Detroit.</i>
Frances Hinkley,	B. S.	18 2-5	<i>Benton Harbor.</i>
Mildred Hinsdale,	A. B.		<i>Ann Arbor.</i>
Fred Hoffman,	B. L.	2 2-5	<i>Port Huron.</i>
Ernest Oscar Holland,	B. L.	6	<i>Money Creek, Minn.</i>
Robert Holland,	Ph. B.	10 4-5	<i>East Saginaw.</i>
John Stuart Williams Holloway,	Ph. B.		<i>Winchester, Ky.</i>
Bert Edward Holmes,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Lydia Day Holmes,	Ph. B.	7 2-5	<i>Bay City.</i>
Alfred William Hookway,	B. L.		<i>Grass Lake.</i>
William Bernard Hoppe,	B. L.		<i>Chelsea.</i>
Jesse Burroughs Hornung,	A. B.		<i>Ann Arbor.</i>
Rose Horton,	Ph. B.	4 1-5	<i>Pontiac.</i>
Hiram Howden,	B.S.(Mech.E.)		<i>Silver Springs, N. Y.</i>
George Erasmus Howes, Jr.,	B. L.		<i>Battle Creek.</i>
Edwin Delos Hoyt,	B.S.(Mech.E.)	13 3-5	<i>Kinderhook.</i>
John T. Noye Hoyt,	A. B.	13 4-5	<i>Grand Rapids.</i>
Charles Frederick Hubbard,	B. L.	7 3-5	<i>Decatur, Ill.</i>
William Frank Hubbard,	A. B.	14	<i>Monroe.</i>
Clarence William Hubbell,	B.S.(C.E.)		<i>Manistee.</i>
Ettie Louise Hulbert,	Ph. B.		<i>Morgan Park, Ill.</i>
Alexander McFarlane Hull,	B. S.		<i>Hamburg.</i>
Melburn Walter Hull,	B.S.(Mech.E.)	5 4-5	<i>Saline.</i>
Margaret Millicent Hunt,	A. B.	20 3-5	<i>Alpena.</i>
Ernest Washburn Hurd,	B.S.(E.E.)		<i>Ann Arbor.</i>
John Stanley Hurd,	A. B.		<i>Detroit.</i>
Frank Simpson Hutchinson,	B.S.(M.E.)	3 4-5	<i>Rochester, N. Y.</i>
Lewis Hutchinson,	A. B.		<i>Des Moines, Ia.</i>
Kate Viola Ilgenfritz,	Ph. B.	6 1-5	<i>Monroe.</i>
Valentine Seaman Ives,	B.S.(C.E.)		<i>Detroit.</i>
Mary Josephine Jackson,	A. B.		<i>Ionia.</i>
John Alexander Jameson, Jr.,	A. B.	14 2-5	<i>Chicago, Ill.</i>
Frederick E. Janette,	B. L.		<i>Owosso.</i>
Mary Adelaide Jay,	A. B.	10 3-5	<i>Richmond, Ind.</i>
Stillman George Jenks,	B.S.(Chem.)	12 1-5	<i>Ionia.</i>
Fred Hyde Jerome,	B. L.	4 1-5	<i>Saginaw.</i>
Lee Doan Johnson,	B.S.(Mech.E.)	5 1-5	<i>Cleveland, O.</i>
William Cummings Johnson,	Ph. B.	10 2-5	<i>Memphis, Tenn.</i>
William Minto Johnstone,	B.S.(C.E.)	6 2-5	<i>Chicago, Ill.</i>
Carroll Dunham Jones,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Walter Scott Jones,	B.S.(C.E.)		<i>Castleton, Vt.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Fred Lockwood Keeler,	B.S.(C.E.)		<i>Grass Lake.</i>
Horace Charles Keifer,	A. B.		<i>Springfield, O.</i>
William Byron Kelly,	B. L.	12 3-5	<i>Xenia, O.</i>
Philo Kemery,	B.S.(M.E.)	11 1-5	<i>Flint.</i>
John Reuben Kempf,	B.S.(Mech.E.)	20	<i>Ann Arbor.</i>
Georgietta Kennedy,	B. L.	5 2-5	<i>Hastings.</i>
Harry James Kennedy,	A. B.	17 4-5	<i>Ionia.</i>
Fred Charles Kent,	B. S.		<i>Ann Arbor.</i>
Walter James Kent,	B. S.		<i>Ann Arbor.</i>
Thomas Kerl,	A. B.	12	<i>Oakland, Neb.</i>
John Pease Keyes,	Ph. B.	15 1-5	<i>Winona, Minn.</i>
William Alfred Kickland,	B. S.	6 2-5	<i>Stanton.</i>
Ella Wickes King,	A. B.	7 3-5	<i>Essexville.</i>
Fred Edward King,	B.S.(C.E.)	12 3-5	<i>Adrian.</i>
Harry Edwin King,	B. L.		<i>Coldwater.</i>
Harry Rufus King,	B.S.(E.E.)		<i>Adrian.</i>
Genevieve Kinne,	A. B.	17 4-5	<i>Ypsilanti.</i>
Samuel Denton Kinne,	A. B.		<i>Ann Arbor.</i>
Gustav Kleene,	A. B.	13 2-5	<i>Peoria, Ill.</i>
Abraham Lincoln Knisely,	B. S.	14 1-5	<i>Benton Harbor.</i>
Lydia Eleanor Kniss,	B. L.	21	<i>Schoolcraft.</i>
Day Krolik,	Ph. B.	10 3-5	<i>Detroit.</i>
Mary Ernestine Krolik,	Ph. B.	10 4-5	<i>Detroit.</i>
Franz Christian Kuhn,	B. S.		<i>Mt. Clemens.</i>
Pomeroy Ladue,	B. S.	18 2-5	<i>Detroit.</i>
Garrett Eugene Lamb,	B. S.	4-5	<i>Clinton, Ia.</i>
John Donald Lamont,	B.S.(C.E.)	4 1-5	<i>Lake Linden.</i>
Robert Patterson Lamont,	B.S.(C.E.)	14 1-5	<i>Detroit.</i>
Ruth Winifred Lane,	A. B.	12	<i>Detroit.</i>
William Beekman Larrabee,	B.S.(Mech.E.)	7 4-5	<i>Detroit.</i>
Rufus Gillett Lathrop,	A. B.		<i>Detroit.</i>
Agnes May Leas,	B. L.	5 3-5	<i>Ann Arbor.</i>
Nannie Fay Leas,	Ph. B.	10 2-5	<i>Ann Arbor.</i>
Robert Blum Lederle,	B. S.		<i>Detroit.</i>
Francis Alexander Leslie,	Ph. B.	19 2-5	<i>Ockley, Ind.</i>
Alfred Courtney Lewerenz,	A. B.	8 4-5	<i>Detroit.</i>
Edward Robert Lewis,	B. L.	13 3-5	<i>Jackson.</i>
Frank Waterman Lightner,	Ph. B.	3 4-5	<i>Detroit.</i>
Stephen Logan Littler,	B. L.		<i>Springfield, Ill.</i>
John Cooper Loomis,	Ph. B.	1	<i>Tiffin, O.</i>
Harriet Angos Lovell,	A. B.	13 2-5	<i>Flint.</i>
Jacob Lowenhaupt,	B. L.	14 2-5	<i>Mt. Vernon, Ind.</i>
Ella Alferetta Ludwig,	A. B.	16 2-5	<i>Ann Arbor.</i>
Cora Elizabeth Lyon,	B. L.		<i>Dexter.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
William John Le Hunte Lyster,	Ph. B.	5 3-5	<i>Detroit.</i>
Edgar Withrow MacPherran,	A. B.	17 2-5	<i>Sterling, Ill.</i>
Ralph Stewart MacPherran,	B. S.	9 1-5	<i>Sterling, Ill.</i>
Elmer Elsworth Mains,	B.S.(M.E.)	12 3-5	<i>Ann Arbor.</i>
Walter Leeman Mann,	Ph. B.	19 4-5	<i>Ann Arbor.</i>
Rollo Glenroy Manning,	B.S.(C.E.)	21	<i>Elkhart, Ind.</i>
George Arnold Mansfield,	B.S.(C.E.)		<i>Kalamazoo.</i>
Wilfred Hamilton Manwarren,	B.S.(E.E.)	4-5	<i>Grayling.</i>
Alfred Cookman Marshall,	B.S.(E.E.)		<i>Detroit.</i>
Ernest Marshall,	B. S.	12 3-5	<i>Aurelius.</i>
Philip Larmon Marshall,	B. L.	5 4-5	<i>Chicago, Ill.</i>
Thomas Frank Marston,	B.S.(Mech.E.)		<i>Detroit.</i>
Edward Lowry Martindale,	B. L.		<i>Fulton, Ill.</i>
Edward Luther Mason,	Ph. B.		<i>Corunna.</i>
Edward Gottlieb Maul,	B. S.	7 2-5	<i>Kewanee, Ill.</i>
William Kilpatrick Maxwell,	A. B.	18 3-5	<i>Cincinnati, O.</i>
Edmund Schuyler Colfax May,	B.S.(C.E.)	20	<i>Newark, N. J.</i>
Eloise Mayham,	A. B.	17 1-5	<i>Stamford, N. Y.</i>
David Porter Mayhew,	Ph. B.		<i>Detroit.</i>
Joseph Lynn McAllister,	Ph. B.	16	<i>Sinclairville, N. Y.</i>
Samuel McKean McCalmont,	B. L.		<i>Fulton, Ill.</i>
Irving George McColl,	B. L.	17 4-5	<i>Delhi Mills.</i>
Archibald McCracken,	A. B.		<i>Birmingham.</i>
George Cox McDiarmid,	B. S.		<i>Little Rock, Ark.</i>
Fred James McElwee,	Ph. B.	3 4-5	<i>Big Rapids.</i>
Hugh Farber McGaughey,	B. S.		<i>Winona, Minn.</i>
George Thomas McGee,	B.S.(C.E.)	8 1-5	<i>Jackson.</i>
Harrison Beecher McGraw,	A. B.	12 4-5	<i>Cleveland, O.</i>
Stanley Dickinson McGraw,	B. L.	2-5	<i>Detroit.</i>
Maude McGregor,	A. B.	4 4-5	<i>Pontiac.</i>
George Edward McIlwain,	A. B.	19	<i>Weston.</i>
Walter Charles McKinney,	B.S.(Mech.E.)		<i>East Saginaw.</i>
John Aloysius McLaughlin,	B. L.	11 2-5	<i>Muskegon.</i>
David Williams McMorrin,	B. S.	6 1-5	<i>Port Huron.</i>
Arthur McNeal,	A. B.	19 2-5	<i>Olympia, Wash.</i>
Isabel McRae,	Ph. B.		<i>Alpena.</i>
Martin McVoy, Jr.,	B. S.	13 2-5	<i>Bay City.</i>
Clarence Linton Meader,	A. B.	10 1-5	<i>Battle Creek.</i>
Clara Marie Meiser,	Ph. B.	11 4-5	<i>Detroit.</i>
William Henry Merner,	Ph. B.	3-5	<i>Cedar Falls, Ia.</i>
Gertrude Emily Merrell,	B. L.		<i>Birmingham.</i>
Richard Dwight Merrill,	B. L.	6 1-5	<i>Saginaw.</i>
Maud Elizabeth Merritt,	B. S.		<i>Battle Creek.</i>
Frank Thomson Merry,	B. L.	20 1-5	<i>Ann Arbor.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
William Metcalf, Jr.,	B.S.(C.E.)		<i>Pittsburgh, Pa.</i>
Ida Mighell,	B. L.	14	<i>Aurora, Ill.</i>
Lee Ezekiel Mighell,	B. L.	5 1-5	<i>Aurora, Ill.</i>
Aura Miller,	B. L.	21 1-5	<i>Ann Arbor.</i>
Edwin Lillie Miller,	A. B.	21	<i>Detroit.</i>
George Henry Miller,	B.S.(E.E.)	1 3-5	<i>Eckford.</i>
Harry Miller,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Jennie Maud Miller,	Ph. B.	12 4-5	<i>Kalamazoo.</i>
John Barnes Miller,	A. B.	4 4-5	<i>Port Huron.</i>
Owen Lambe Miller,	A. B.	16	<i>Plymouth.</i>
Wilhelm Miller,	A. B.	6 2-5	<i>Detroit.</i>
William Smith Miller,	Ph. B.		<i>Rockford, Ill.</i>
Loren Douglas Milliman,	A. B.	15 4-5	<i>Lakeville, N. Y.</i>
Warren French Mills, LL. B.,	B. L.	23	<i>San Francisco, Cal.</i>
Karl Roswell Miner,	B.S.(C.E.)		<i>Ann Arbor.</i>
Jesse Cameron Moore,	Ph. B.		<i>Delphi, Ind.</i>
Reuben Rice Moore,	A. B.	12 3-5	<i>St. Clair.</i>
Dwight Cadogan Morgan,	B.S.(C.E.)		<i>Dwight, Ill.</i>
Martin Morris,	B.S.(C.E.)		<i>Coloma, Ind.</i>
Frank Marion Morrison,	A. B.	6 1-5	<i>Castine, O.</i>
Jacob Worley Morrison,	A. B.	6 1-5	<i>Castine, O.</i>
Edgar Martin Morsman, Jr.,	Ph. B.		<i>Omaha, Neb.</i>
Joseph Jenry Morsman,	B.S.(C.E.)		<i>Omaha, Neb.</i>
Edith Irene Moser,	B. L.	2 4-5	<i>Charlotte.</i>
Bertrand Paul Mossman,	Ph. B.	12 4-5	<i>Fort Wayne, Ind.</i>
Arthur Douglass Mott,	B.S.(C.E.)	21 2-5	<i>Battle Creek.</i>
Oscar Wood Moyle, B. S., University of Deseret.	Ph. B.	20 3-5	<i>Salt Lake City, Utah.</i>
George Fred Mulliken,	A. B.	6 1-5	<i>Detroit.</i>
Albert Charles Muma,	B.S.(E.E.)	7 3-5	<i>Ann Arbor.</i>
Ida May Muma,	A. B.		<i>Ann Arbor.</i>
Loyal Levi Munn, Jr.,	A. B.	11 3-5	<i>Freeport, Ill.</i>
William Robbins Murray,	Ph. B.	6 1-5	<i>Marquette.</i>
Frank Wesley Nagler,	B. L.	12 2-5	<i>Freeport.</i>
Willis Orville Nance,	B. L.	1 3-5	<i>Kewanee, Ill.</i>
Elmer Hartson Neff,	B.S.(Mech.E.)	23 4-5	<i>Flint.</i>
William Lyman Neff,	B.S.(Mech.E.)		<i>Flint.</i>
James Burton Nelson,	B.S.(C.E.)	19 2-5	<i>Bloomington, Ind.</i>
Cyrenius Adelbert Newcomb, Jr.,	B. S.		<i>Detroit.</i>
Edward Dean Newcomb,	A. B.		<i>Blissfield.</i>
William Wilmon Newcomb,	B. S. (Bio.)	1	<i>Detroit.</i>
Frederick Charles Newcombe,	B. S.	19	<i>Ann Arbor.</i>
Adnah Clifton Newell,	B.S.(Mech.E.)	4 3-5	<i>Grand Rapids.</i>
Edward Crampton Nichols,	B. L.	5	<i>Maywood, Ill.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Vernon Elmer Nichols,	B. L.	2 2-5	Greenville.
Walter Hammond Nichols,	B.S.(Chem.)	9 4-5	Salt Lake City, Utah.
Elbert Nicholson,	B.S.(E.E.)	2 3-5	Kalamazoo.
Homer Burdett Norton,	B.S.(C.E.)		Southington, O.
Willard Davalson Norton,	B. L.	5 4-5	La Porte, Ind.
Flora Oakley,	A. B.	11 1-5	Ann Arbor.
Edith May Orr,	B. S.		Manistique.
Loran David Osborn,	A. B.		Grand Rapids.
Samuel Osborn,	B. S.	4-5	Manchester.
Maurice Roy Osburn,	B. S.	3-5	Owosso.
Martha Drake Owen,	A. B.	4 3-5	DeLand, Fla.
Lola Silence Paddock,	B. L.		Coldwater.
Benjamin Eldridge Page,	A. B.	12 4-5	Ann Arbor.
William Loyd Page,	A. B.	19 1-5	Ann Arbor.
Sarah Adelaide Paine,	Ph. B.	11 1-5	Ann Arbor.
Walter Truman Palmer,	A. B.	10 2-5	Port Allegany, Pa.
Hugo Pam,	Ph. B.	5 4-5	Chicago, Ill.
Samuel Culver Park,	A. B.	4 2-5	Salt Lake City, Utah.
William Pool Parker,	B.S.(C.E.)		Owosso.
Charles Lester Parmelee,	B.S.(C.E.)		Toledo, O.
Richard Sumner Parmly,	A. B.	7 4-5	Chicago, Ill.
Samuel Pleasants Parmly,	B.S.(E.E.)	3 1-5	Chicago, Ill.
Maude Parsons,	A. B.		Saginaw.
Henry Milton Patten,	Ph. B.		Muscatine, Ia.
Douglas Pattison,	B. L.		Freeport, Ill.
Ferdinand Spalding Peck,	B. L.		Chicago, Ill.
Herbert Edmund Peckham,	A. B.		Providence, R. I.
Jessica Vaughn Penny,	A. B.	1 3-5	Ann Arbor.
Carl Dio Perry,	A. B.	6 2-5	Elk Creek, N. Y.
Earl Clifford Peters,	Ph. B.		Columbus, O.
John Arthur Peters,	A. B.		Flat Rock.
Edith Ellen Pettee,	B.S.(Bio.)		Flint.
Nellie Genevieve Phillips,	Ph. B.	6 1-5	Ann Arbor.
Adella Christel Pickett,	B. L.	5 1-5	Leslie.
Adrian John Pieters,	B.S.(Bio.)		Holland.
Mary Plant,	A. B.		Minneapolis, Minn.
William David Plant,	A. B.	13	Minneapolis, Minn.
Lewellyn Sherrill Pomeroy,	B.S.(C.E.)		Kalamazoo.
Florence Hattie Pope,	Ph. B.		Allegan.
Byron Cleveland Porter,	Ph. B.		Oak Park, Ill.
Frederic Sherman Porter,	A. B.	3 4-5	Cleveland, O.
Minott Eugene Porter,	B.S.(C.E.)		West Richfield, O.
Mary Fairman Power,	Ph. B.		Detroit.
George Griffin Prentis,	B. L.	6 2-5	Detroit.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Bertha Edna Pritchard,	Ph. B.	9 2-5	<i>Allegan.</i>
Richard Rider Putnam,	A. B. ¹		<i>Ypsilanti.</i>
William Charles Quarles,	Ph. B.	5	<i>Racine, Wis.</i>
Harry Nelson Quigley,	A. B.	22 2-5	<i>Richwood, O.</i>
Agnes Clarissa Ralph,	B. L.	6 1-5	<i>Storm Lake, Ia.</i>
William Butterfield Ramsay,	A. B.	20 4-5	<i>Detroit.</i>
Arthur Theodore Randall,	A. B.	6	<i>Chicago, Ill.</i>
Harrison Macallester Randall,	Ph. B.		<i>Ann Arbor.</i>
Alfred Day Rathbone, Jr.,	A. B.	5 3-5	<i>Grand Rapids.</i>
Georgie Adams Rathbone,	Ph. B.		<i>Ann Arbor.</i>
George Robert Ray, Jr.,	Ph. B.	5	<i>Manistee.</i>
Howard Monroe Raymond,	B.S.(Mech.E.)		<i>Grass Lake.</i>
Fanny K. Read,	B. L.	19 1-5	<i>Richland.</i>
Will Reardon, Jr.,	A. B.		<i>Midland.</i>
George Rebec,	Ph. B.	13 4-5	<i>East Saginaw.</i>
Robert Redfield,	Ph. B.		<i>Chicago, Ill.</i>
Henry Frederick Lewis Reichle,	A. B.		<i>East Saginaw.</i>
Edward Snover Reid,	B.S.(C.E.)		<i>Vassar.</i>
Robert Minard Reid,	A. B.	12 2-5	<i>Salem, Ind.</i>
Robert Kennicott Reilly,	Ph. B.	21	<i>Chicago, Ill.</i>
William Henry Rheinfrank,	B. S.	20 ⁰	<i>Perrysburg, O.</i>
Helen Annetta Rice,	B. L.	7 1-5	<i>Englewood, Ill.</i>
Herbert Louis Rice,	B.S.(C.E.)	6 4-5	<i>Englewood, Ill.</i>
Albert Dykeman Rich,	B. L.	10 1-5	<i>Englewood, Ill.</i>
Frank Rich,	Ph. B.		<i>Englewood, Ill.</i>
Hedley Vicars Richardson,	Ph. B.		<i>Detroit.</i>
Leon Josiah Richardson,	A. B.	18 4-5	<i>Jackson.</i>
Frederic Stephen Richmond,	B.S.(Mech.E.)	14 3-5	<i>Ann Arbor.</i>
Jacob Ringer,	Ph. B.	20 4-5	<i>Chicago, Ill.</i>
Josephine Louise Roberts,	A. B.		<i>La Salle, Ill.</i>
Oscar Roberts,	B.S.(C.E.)	6 2-5	<i>Westfield, Ind.</i>
Roscoe Linscott Roberts,	B. S.	4 4-5	<i>Jefferson, Ind.</i>
Eugene Herbert Robertson,	B. L.	14 2-5	<i>Ogden Centre.</i>
James Robertson,	B. S.	12 1-5	<i>Dayton, Wash.</i>
Opal Robeson,	Ph. B.	13 3-5	<i>Arcanum, O.</i>
Edward Van Dyke Robinson,	A. B.	19 2-5	<i>Ann Arbor.</i>
Pearl Osborne Robinson,	B. L.		<i>Plain City, O.</i>
Hugh Rodman,	B.S.(Mech.E.)		<i>Frankfort, Ky.</i>
Emma Winner Rogers,	B. L.	U (5)	<i>Ann Arbor.</i>
John Randolph Rogers,	B.S.(Chem.)	20 1-5	<i>Rome, Italy.</i>
Wallace Brown Rogers,	A. B.	5 2-5	<i>Clinton, Ia.</i>
Charles Whitall Root,	A. B.	14 2-5	<i>Ann Arbor.</i>
Edwin John Rosencrans,	B.S.(C.E.)		<i>Chebanse, Ill.</i>
Katharine Bradley Ross,	B. S.		<i>Terre Haute, Ind.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
Pete Whitcome Ross,	A. B.	7 1-5	Mason, O.
Filibert Roth,	B. S.	24	Ann Arbor.
George Herbert Rowe,	B.S.(E.E.)	13	Fort Wayne, Ind.
Cora Maria Rowell,	Ph. B.	19 3-5	Bloomington, Ill.
Merib Susan Rowley,	A. B.	20 4-5	Adrian.
John Hiram Ruckman,	B.S.(Mech.E.)	5 1-5	Saline.
Horton Casparis Ryan,	B. L.		Washington, D. C.
Louis Carlton Sabin,	B.S.(C.E.)	18 2-5	Memphis.
Robert Lemuel Sackett,	B.S.(C.E.)	14 3-5	Mt. Clemens.
Homer Erwin Safford,	Ph. B.	5 4-5	Plymouth.
Kate Sagendorph,	B. L.	3 2-5	Jackson.
George Whitney Sanborn,	Ph. B.	6 2-5	St. Clair.
Mary Eliza Sanborn,	Ph. B.	12 3-5	Port Huron.
Harry Arthur Sanders,	A. B.	15 2-5	Livermore, Me.
Edmond Lindsay Sanderson,	A. B.		Detroit.
James Savage,	B.S.(C.E.)		Buffalo, N. Y.
Carl Schlenker,	A. B.	6 2-5	Toledo, O.
Alfred William Scobey,	B. L.	4 3-5	Kankakee, Ill.
Sylvester Harry Scovel,	B.S.(Mech.E.)	4	Wooster, O.
Harry Rogers Seager,	Ph. B.	20 2-5	Ann Arbor.
Annie Rose Seely,	B. L.		Coldwater.
Paul Henry Seymour,	B.S.(Chem.)		La Porte, Ind.
Walter Webster Seymour,	B.S.(C.E.)	17	La Porte, Ind.
Genevieve Martha Sheehan,	B. L.	7 2-5	Niles.
Benjamin Tichenor Sheldon,	B. L.		Sinclairville, N. Y.
Penoyer Levi Sherman, Jr.,	B. S.	13 2-5	Chicago, Ill.
Samuel Sherman,	B. S.	13 2-5	Chicago, Ill.
Vernon Burr Sherrod,	B.S.(Chem.)		Decatur.
Frederic Lang Sherwin,	Ph. B.	8 2-5	Leadville, Col.
Herbert Bradish Shoemaker,	A. B.	12 3-5	Ann Arbor.
Ella Gertrude Short,	Ph. B.		Decatur, Ill.
Darius Parsons Shuler, Ph. C.,	B. L.	17 2-5	Ypsilanti.
Ada Skinner,	B. L.		Battle Creek.
Anna Blanche Skinner,	B. L.		Baldwinsville, N. Y.
Walter Fulton Slocum,	B. L.	9 1-5	Chicago, Ill.
James Burt Smalley,	B.S.(E.E.)	6 1-5	Bay City.
Albert Henry Smith,	B.S.(Chem.)	2	Cedar Rapids, Ia.
Almeron Warren Smith,	B. L.		Oconee, Ill.
Edward Hurd Smith,	Ph. B.	13	Detroit.
Edwin Merrill Smith,	B.S.(C.E.)	5 3-5	Chicago, Ill.
Evelyn Amanda Smith,	A. B.	18 4-5	Ann Arbor.
Frank Carpenter Smith,	A. B.	5 3-5	Chicago, Ill.
Frank Hubbard Smith,	B. S.		Muskegon.
Frederic Latta Smith,	Ph. B.	19 4-5	Lansing.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Harry Tyler Smith,	A. B.	6 2-5	<i>Detroit.</i>
Herbert Scott Smith,	A. B.	13 1-5	<i>St. Paul, Minn.</i>
Oliver Charles Smith,	B.S.(C.E.)	17	<i>Flint.</i>
Richard Root Smith,	A. B.	3 3-5	<i>Grand Rapids.</i>
Walter Olcott Smith,	A. B.		<i>Detroit.</i>
William Clive Smith,	Ph. B.	3 2-5	<i>Tioga, Pa.</i>
George Herbert Snow,	Ph. B.	20 2-5	<i>Winona, Minn.</i>
George David Sones,	B.S.(Bio.)	6 1-5	<i>Grand Rapids.</i>
Lula Bartlett Southmayd,	Ph. B.		<i>Ann Arbor.</i>
Charles Wilson Southworth,	A. B.		<i>Forestville, N. Y.</i>
Edwin Weston Sparks,	B. L.		<i>Alton, Ill.</i>
Charles Carl Spencer,	B. L.	11 2-5	<i>Ann Arbor.</i>
Carrie May Sperry,	A. B.		<i>Ann Arbor.</i>
Miranda Belle Sperry,	Ph. B.	5 4-5	<i>Ann Arbor.</i>
Sherman Clark Spitzer,	B. L.		<i>Elgin, Ill.</i>
George Bowditch Springer,	B.S.(C.E.)	19 3-5	<i>Chicago, Ill.</i>
Walter George Stark,	B. S.		<i>Detroit.</i>
Annette Stayt,	B. S.	10	<i>Ann Arbor.</i>
Grace Adelle Stayt,	Ph. B.	12 4-5	<i>Ann Arbor.</i>
Fannie Lucinda Stearns,	B. L.		<i>Adrian.</i>
Henry Porter Stearns,	B. S.	19	<i>Adrian.</i>
Caroline Campbell Sterling,	A. B.		<i>Grand Rapids.</i>
Paul Edwin Stillman,	A. B.	14 4-5	<i>Jefferson, Ia.</i>
Walter Savage Stillman,	A. B.	23	<i>Council Bluffs, Ia.</i>
Edward Marsh St. John,	B.S.(C.E.)	2 2-5	<i>Highland.</i>
William Stout,	B.S.(C.E.)		<i>Olcott, N. Y.</i>
Charles William Stratton,	Ph. B.		<i>St. Joseph.</i>
Edward Earle Stuart,	A. B.	8	<i>Ottumwa, Ia.</i>
John McDonald Stull,	B. L.	3 1-5	<i>Rochester, N. Y.</i>
Frederick Bernard Sturm,	Ph. B.	6 1-5	<i>Saline.</i>
Katharine Eliza Sumner,	Ph. B.	11 1-5	<i>Toledo, O.</i>
Forest Glenwood Sweet,	Ph. B.	20 2-5	<i>Battle Creek.</i>
Brown Fred Swift,	B. S.	5 3-5	<i>Chicago, Ill.</i>
Oscar William Swift,	A. B.	4 4-5	<i>Allegan.</i>
Sallie Aline Szold,	Ph. B.	11 1-5	<i>Peoria, Ill.</i>
Arthur Charles Tagge,	B. S.	5	<i>Ann Arbor.</i>
Lucien Sterling Taylor,	B. L.	5 4-5	<i>Ann Arbor.</i>
William Willard Taylor,	B.S.(M.E.)	1 3-5	<i>Ann Arbor.</i>
Rufus Calvin Thayer,	Ph. B.	11 2-5	<i>Northville.</i>
Ada Thomas,	A. B.	6 2-5	<i>Cassopolis.</i>
Charles Ladd Thomas,	Ph. B.		<i>Omaha, Neb.</i>
Gale Thompson,	B. L.		<i>Chicago, Ill.</i>
May Braley Thompson,	A. B.		<i>Adrian.</i>
Edgar Miller Thorpe,	Ph. B.	13	<i>Detroit.</i>

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NAME.	DEGREE.	COURSES.	RESIDENCE.
William Collett Tichenor,	A. B.	6	<i>Lebanon, O.</i>
Nina Marie Tobey,	B. L.	5 4-5	<i>Galesburg.</i>
John Howard Todd,	A. B.	16 3-5	<i>Urbana, O.</i>
Lucius Edward Torrey,	B. L.	11 4-5	<i>Grand Rapids.</i>
George Thomas Towl,	B. S.		<i>Muskegon.</i>
Charles Henry Towle,	B. S.	2 1-5	<i>Niobrara, Neb.</i>
Pitt Townsend,	A. B.		<i>New London, O.</i>
David Trainer, Jr.,	B. L.		<i>Thurlow, Pa.</i>
Julius Curtis Travis,	B. L.	4 1-5	<i>La Porte, Ind.</i>
Albert Willis Tressler,	A. B.	9 4-5	<i>Montpelier, O.</i>
Samuel Mumford Trevellick,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Lyman Benjamin Trumbull,	Ph. B.	13 2-5	<i>Sandstone.</i>
William Hall Turnbull,	A. B.	13 1-5	<i>Detroit.</i>
Gabriel Cooley Tuthill,	B.S.(C.E.)	13 2-5	<i>Ionia.</i>
Arthur J. Tuttle,	Ph. B.	7 3-5	<i>Leslie.</i>
Paul John Ullrich,	B. S.	6 4-5	<i>Mt. Clemens.</i>
Edward Hamilton Vail,	B. L.	5 4-5	<i>Kankakee, Ill.</i>
John Arthur Van Arsdale,	A. B.	11 3-5	<i>Ann Arbor.</i>
Oswald Daniel Vandersluis,	A. B.	20	<i>Grand Rapids.</i>
Horace Van Deventer,	Ph. B.	U. (5)	<i>Knoxville, Tenn.</i>
Hugh Flournoy Van Deventer,	B.S.(Mech.E.)	8	<i>Knoxville, Tenn.</i>
Anna Marie Van Housen,	Ph. B.		<i>Prattsburgh, N. Y.</i>
Arthur Van Inwagen,	B.S.(Mech.E.)		<i>Chicago, Ill.</i>
James Van Inwagen, Jr.,	B. L.	5 2-5	<i>Chicago, Ill.</i>
Raymond Elmoine Van Syckle,	B. S.	13 3-5	<i>Detroit.</i>
Harry Isaac Van Tuyl,	B. S.		<i>Ypsilanti.</i>
Charles Francis Vaughn,	Ph. B.	1 4-5	<i>Ann Arbor.</i>
Arthur Henry Veysey,	A. B.	7	<i>Toledo, O.</i>
Gertrude Sibbald Wade,	Ph. B.	5 4-5	<i>Ann Arbor.</i>
Mulford Wade,	Ph. B.	15	<i>Cleveland, O.</i>
Edward Thomas Waffle,	B.S.(Mech.E.)	1 3-5	<i>Girard.</i>
Harry Wiburt Wakelee,	B. L.	18 2-5	<i>Wheaton, Ill.</i>
Ellis David Walker,	B. S.	18 4-5	<i>Ann Arbor.</i>
Frank Banghart Walker,	Ph. B.	21	<i>Lapeer.</i>
George Morton Walker, Jr.,	B.S.(C.E.)	21 2-5	<i>Lawrence, Kan.</i>
Henry Hammersley Walker,	A. B.		<i>Ann Arbor.</i>
Mary Eloise Walker,	A. B.	6 2-5	<i>St. Johns.</i>
Thaddeus Henry Walker,	B. S.	10	<i>Walkerville, Ont.</i>
Victoria Wallace,	Ph. B.		<i>Decatur, Ill.</i>
Walter George Wallace,	B.S.(Chem.)		<i>Ypsilanti.</i>
Minnie Amelia Walton,	A. B.	6 2-5	<i>Cheboygan.</i>
Albert Walworth,	B. S.	9 2-5	<i>South Bend, Ind.</i>
Margaret Evelyn Waples,	B. S.		<i>Ann Arbor.</i>
Carl Cleghorn Warden,	Ph. B.	5 1-5	<i>Ann Arbor.</i>

NAME.	DEGREE.	COURSES.	RESIDENCE.
Charles Damuth Warner,	A. B.	8 1-5	<i>Battle Creek.</i>
Edward Dodge Warner,	B. L.	13	<i>Jackson.</i>
Charles Beecher Warren,	Ph. B.		<i>Ann Arbor.</i>
Cyrus Carleton Warren,	B.S.(Mech.E.)	5 1-5	<i>Hinsdale, Ill.</i>
Eugene Clarence Warriner,	A. B.	12 2-5	<i>Paw Paw, Ill.</i>
Fred Waterhouse,	B.S.(C.E.)	5	<i>Honolulu, Hawaiian Isl's.</i>
Lilian Lucile Watling,	Ph. B.		<i>Ypsilanti.</i>
Edward Lacey Watrous,	B. L.		<i>Des Moines, Ia.</i>
Marion Isabel Watrous,	B. L.	11 4-5	<i>Des Moines, Ia.</i>
Philip Bernard Watrous,	B. L.	3 1-5	<i>Des Moines, Ia.</i>
Carrie May Watson,	B. S.	3 4-5	<i>Ann Arbor.</i>
Grace Clark Webb,	B. L.		<i>Jackson.</i>
Charles Albert Wheat,	B. L.	18 3-5	<i>Racine, Wis.</i>
Ellen Wheeler,	A. B.	13	<i>Kalamazoo.</i>
Benjamin Riddle Whipple,	A. B.	6 1-5	<i>Port Huron.</i>
Frank Bates Whipple,	A. B.	6 2-5	<i>Port Huron.</i>
Lee Waldron White,	B. L.		<i>Sturgis.</i>
Louis Grant Whitehead,	A. B.		<i>Vulcan.</i>
John Palmer Whiting,	B.S.(Mech.E.)	1 3-5	<i>St. Clair.</i>
William Scott Whiting,	B. L.	1 3-5	<i>St. Clair.</i>
William Lincoln Whitney,	B. L.		<i>Port Sanilac.</i>
Lawrence Johnson Whittemore,	B.S.(Mech.E.)		<i>Detroit.</i>
Edward Dana Wickes,	B.S.(E.E.)	3	<i>Helena, Mon.</i>
Pauline Elisabeth Wies,	A. B.		<i>Bellevue, O.</i>
Annie Mumford Wiley,	A. B.		<i>Detroit.</i>
William Wilhartz,	B. L.	13 2-5	<i>Chicago, Ill.</i>
Edwin Conklin Wilkinson,	Ph. B.		<i>Marquette.</i>
Thomas Lee Wilkinson,	B.S.(Mech.E.)	18 3-5	<i>Davenport, Ia.</i>
Charles MacAlister Willcox,	B. L.		<i>Detroit.</i>
Lulu Helen Williams,	Ph. B.		<i>Allegan.</i>
Neil Hooker Williams,	B.S.(E.E.)		<i>Clinton.</i>
Viola May Williams,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Ruth Anna Willoughby,	Ph. B.	20	<i>Ann Arbor.</i>
Florence Edna Wilson,	Ph. B.	18 4-5	<i>Belding.</i>
William Henry Wilson,	B.S.(Bio.)		<i>Allegan.</i>
Frank Arner Windes,	B.S.(Mech.E.)		<i>Winnetka, Ill.</i>
Jenny Louise Wire,	Ph. B.	19 1-5	<i>Winslow, Ill.</i>
George Monroe Wisner,	B.S.(C.E.)	10 3-5	<i>Detroit.</i>
Robert Henry Wolcott,	B. L.	18 4-5	<i>Grand Rapids.</i>
Bertha Wolf,	Ph. B.	11 2-5	<i>Grand Rapids.</i>
Irving Mason Wolverton,	B.S.(C.E.)	19 4-5	<i>Flint.</i>
Frederick Elias Wood,	A. B.	6	<i>Oak Park, Ill.</i>
Leslie Henry Wood,	Ph. B.	13	<i>Ann Arbor.</i>
Nathan Putnam Wood,	B. L.	16 2-5	<i>Dubuque, Ia.</i>

200 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Edvard James Woodworth,	A. B.	12 4-5.	Fort Wayne, Ind.
Grace Darlene Worrall,	B. L.	7 1-5	Ann Arbor.
Ada Zarbell,	A. B.	6 4-5	Chicago, Ill.
Adolph A. Zimmerman,	B.S.(Mech.E.)	1 3-5	Helena, Mon.
Edwin Abraham Zumbro,	A. B.	22 2-5	Purdin, Mo.

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STUDENTS NOT CANDIDATES FOR A DEGREE.

NAME.	RESIDENCE.
Harry Lincoln Allan,	Cleveland, O.
Nellie May Balcom,	Sparta.
Ada Maria Bennett,	Marshall.
Joseph Biscomb,	Grand Rapids.
Charles Waters Bragg,	Ann Arbor.
Fred Fant Briggs,	Mt. Gilead, O.
Joseph Larkin Brouse,	Eaton, O.
Judson Brown,	Ann Arbor.
Andrew Allan Brown,	Ann Arbor.
Ella Buck,	Franklin Grove, Ill.
Frank Ellsworth Burkhead,	Ann Arbor.
Mary Elizabeth Butler,	New York, N. Y.
Wolcott Hackley Butler, LL. B.,	Allegan.
Kittie Roberts Catlisle,	East Saginaw.
Eugene Carmichael,	Grand Rapids.
Lauren Duane Carr,	Brayton, S. Dak.
Harry Breckenridge Carter,	Frankfort, Ind.
Mary Ella Carter,	Andover, Mass.
Charles Vivian Childs,	Camberley, England.
Ardie Marian Clark,	Ann Arbor.
Ward Clement,	Milwaukee, Wis.
William Henry Code,	East Saginaw.
Elizabeth Marshall Coffin,	Detroit.
Jesse I. Conklin,	Springport.
Frank Irving Consaul,	Toledo, O.
Frances Jemima Davis,	Sterling, Kan.
Alice Phillips Denison,	Ann Arbor.
Clarence Elbert DePuy,	Jackson.
Anna Docking,	Clay Center, Kan.
Florence Ermina Dodge,	Toledo, O.
Mamie Ellen Dolphin,	Emporia, Kan.
Thomas John Doughty,	Matteawan, N. Y.
Josephine Aldrich Drury,	Ypsilanti.
Hattie Eddy,	Ann Arbor.

NAME.	RESIDENCE.
William Frank Edwards,	<i>Ann Arbor.</i>
Frank Lewis Evans,	<i>Decatur, Ill.</i>
Ervin Edgar Ewell, Ph. C.,	<i>Ann Arbor.</i>
Bertha Helena Fairbanks,	<i>San Diego, Cal.</i>
Charles Edmund Filkins,	<i>Burton.</i>
Grace Webster Ford,	<i>Jackson.</i>
Ethel Fountain,	<i>Santa Rosa, Cal.</i>
John Andrew Garvey,	<i>Fort Wayne, Ind.</i>
Grace Garwood,	<i>Ann Arbor.</i>
Andrew Ellsworth Gibson,	<i>Ann Arbor.</i>
Ada Murray Gilbert,	<i>Ann Arbor.</i>
Frank Gilman Gilland,	<i>Ann Arbor.</i>
Henry Newell Goddard,	<i>Ann Arbor.</i>
William Godfrey,	<i>Dixon, Ill.</i>
Charles T. Griffin,	<i>Ann Arbor.</i>
Willard Wilmer Griffin,	<i>Wenona, Ill.</i>
Charles Maltravis Haft,	<i>Rapid City, S. Dak.</i>
Joseph Engle Haines,	<i>Mickleton, N. J.</i>
Carrie Rosepha Heaton,	<i>Charlotte.</i>
Josephine Fannie Henion,	<i>Ann Arbor.</i>
Julia Herrick,	<i>Oak Park, Ill.</i>
Marion Heywood,	<i>Chicago, Ill.</i>
Clark Warner Hill,	<i>Ann Arbor.</i>
Mollie Priscilla Hobart,	<i>Odell, Ill.</i>
Sophia Adelaide Hobe,	<i>San Francisco, Cal.</i>
Harry Eugene Hodge,	<i>Ann Arbor.</i>
Charles Arthur Howell,	<i>Detroit.</i>
Albertie Janes,	<i>Ann Arbor.</i>
Minnie Helen Jennings,	<i>Grand Rapids.</i>
Frances Minerva Johnson,	<i>Lacon, Ill.</i>
Lillie Wyckoff Johnson,	<i>Memphis, Tenn.</i>
Henry Milnor Joy,	<i>Ann Arbor.</i>
James Hamilton Kaye,	<i>Custer.</i>
Katie Harmon Kellogg,	<i>Detroit.</i>
Edna Alexine King,	<i>Coldwater.</i>
Anne Kirtley,	<i>Ludlow, Ky.</i>
Edwin Livezey,	<i>Clarksborough, N. J.</i>
Thomas Lyons,	<i>Walla Walla, Wash.</i>
Allan Campbell MacDonald,	<i>Black River.</i>
Grant Mahan,	<i>Mt. Morris, Ill.</i>
Lillus Emma Mahan,	<i>Mt. Morris, Ill.</i>
Eva Idel Mains,	<i>Ann Arbor.</i>
Maude Matthews,	<i>Kansas City, Mo.</i>
Clinton Perham McAllaster,	<i>Ann Arbor.</i>

NAME.	RESIDENCE.
Thomas Shepard McClure,	<i>St. Cloud, Minn.</i>
Leonora McKay,	<i>Plainwell.</i>
Frank William McKee,	<i>Richland Center, Wis.</i>
Joseph Francis Merrill,	<i>Richmond, Utah.</i>
Joseph Leggett Miller,	<i>Kewanee, Ill.</i>
Lennette Gertrude Milliman,	<i>Lakeville, N. Y.</i>
Nagamasa Minoda,	<i>Tokio, Japan.</i>
Elbert Frank Mix,	<i>Eaton Rapids.</i>
John Augustus Moore,	<i>Buffalo, N. Y.</i>
Wendell Phillips Moore,	<i>Ann Arbor.</i>
Maud Whitcomb Morey,	<i>Chicago, Ill.</i>
Frank Eliot Mulder,	<i>Victor.</i>
George Allen Murphy,	<i>Phoenix, Arizona.</i>
*Albert Leverett Murray,	<i>Riverside, Ill.</i>
Henry Edmund Naegely,	<i>East Saginaw.</i>
Marion Franklin Nichols,	<i>Beach City, O.</i>
Ignatius Joseph Ohman,	<i>Eureka, Cal.</i>
Frank Burt Olney,	<i>Ludington.</i>
Roger Owsley,	<i>Sonora, Ky.</i>
Marietta Parker,	<i>Adrian.</i>
Stephen Henry Payne,	<i>Elmira, N. Y.</i>
Olive Estelle Peck,	<i>Sterling, Ill.</i>
Carrie Eleanor Penfield,	<i>Battle Creek.</i>
Charles Alpheus Pratt,	<i>Toledo, O.</i>
Zuell Preston,	<i>Wilmington, Del.</i>
Willard R. Pyle,	<i>Willowdale, Pa.</i>
Jennie Ray,	<i>Ishpeming.</i>
Harry Chauncey Reiner,	<i>Keokuk, Ia.</i>
Perry Charles Remick,	<i>Rock Creek, O.</i>
George Campbell Rew,	<i>Chicago, Ill.</i>
Jennie Richards,	<i>Opechee.</i>
Harriet Day Riely,	<i>New Albany, Ind.</i>
Harry Cook Rindge,	<i>Grand Rapids.</i>
Adelbert Henry Roberts,	<i>Ann Arbor.</i>
George Atla Robinson,	<i>Detroit.</i>
Dorothea Roth,	<i>Chicago, Ill.</i>
William Harvey Rush,	<i>Greenville, O.</i>
Fred Thomas Russell,	<i>East Rindge, N. H.</i>
Ralph Sage,	<i>St. Johns.</i>
Julius Otto Schlotterbeck, Ph. C.,	<i>Ann Arbor.</i>
Louis Ernst Schmidt,	<i>Chicago, Ill.</i>
Annie Amelia Schryver,	<i>Ann Arbor.</i>

* Deceased.

NAME.	RESIDENCE.
Laura Sciurus,	<i>Saginaw.</i>
Elizabeth Caroline Seymour,	<i>Ann Arbor.</i>
Edith Lois Sheffield,	<i>Battle Creek.</i>
George Lawrence Shoupe,	<i>Warsaw, Ind.</i>
Lizzie Irene Sias,	<i>Midland.</i>
Isaac Newton Smith,	<i>Salt Lake City, Utah.</i>
Sarah Effie Smith,	<i>Newburyport, Mass.</i>
Charles Newton Sowers,	<i>Hart.</i>
Laura Eunice Sprague,	<i>Naples, N. Y.</i>
Sophronia Leland Stevens,	<i>Ann Arbor.</i>
Burton Strait,	<i>Shakopee, Minn.</i>
Jessie Amelia Stuckey,	<i>Ann Arbor.</i>
Edward Everett Taylor,	<i>Owosso.</i>
Sarah McCord Taylor,	<i>Portland, Me.</i>
Carrie Templeton,	<i>Battle Creek.</i>
Lewis Lothrop Trowbridge,	<i>Lewiston, N. Y.</i>
Esther Boise VanDeman,	<i>Ann Arbor.</i>
Otto Louis Edgar Weber,	<i>Detroit.</i>
Katherine Alice White,	<i>Ionia.</i>
Charles Gustavus Wicker, Jr.,	<i>Chicago, Ill.</i>
Elsie Gertrude Willis,	<i>Bloomington, O.</i>
Seth Clark Wilson,	<i>Alma, Ill.</i>
Elizabeth Davis Wood,	<i>Mt. Pleasant, Pa.</i>
Joseph Baldwin Wood, Ph. C.,	<i>Paterson, N. J.</i>
Anna Olivia Yeaton,	<i>Winona, Minn.</i>
Mary Zimmerman,	<i>Cairo, Ill.</i>

DEPARTMENT
OF
Medicine and Surgery.

FACULTY.

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WILLIAM A. CAMPBELL, M. D.,
SECRETARY.
GOTTHELF C. HUBER, M. D.,

HENRY WADE ROGERS, A. M.,
Lecturer on the Law relating to Physicians.

OTHER INSTRUCTORS AND ASSISTANTS.

CHARLES P. BECKWITH, B. S.,
JOHN D. RIKER, B. S.,
DAVID M. LICHTY, B. S.,
JAMES G. LYND, M. D.,

CYRENUS G. DARLING, M. D.,
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 VIDA A. LATHAM, B. S.,
 DAVID G. COOLIDGE, M. D.,
 FRANCIS W. BREWER, M. D.,
 LORENZO BURROWS, M. D.,
 OLIVER A. LACRONE, M. D.

STUDENTS.

RESIDENT GRADUATES.

NAME.	RESIDENCE.
Anne Hall Stewart Flatt, M. D.,	<i>Ann Arbor.</i>
Oliver Almond LaCrone, M. D.,	<i>Ann Arbor.</i>
Clara Augusta Oswald, M. D.,	<i>Ann Arbor.</i>

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Edwin Sawyer Antisdale, B.S., Michigan Agricultural College.	<i>Nottawa,</i>	Faculty.
Lotta Ruth Arwine,	<i>Columbus, Ind.,</i>	J. S. Arwine.
Lyle Cholwell Bacon,	<i>Niles,</i>	Faculty.
Oscar Baert,	<i>Zeeland,</i>	Johnson & Boise.
John A. Barnette,	<i>Potsdam, N. Y.,</i>	D. W. Finnemore.
Merritt Grant Bassett,	<i>Saline,</i>	Faculty.
George Bates,	<i>Arkona, Ont.,</i>	Faculty.
Thekla Natalie Bengel,	<i>Hannibal, Mo.,</i>	Faculty.
Joseph D. Bennett,	<i>Litchfield,</i>	Faculty.
Joseph Estabrook Bennett,	<i>Wayne,</i>	E. O. Bennett.
Ada Bock,	<i>Akron, O.,</i>	Faculty.
John Ackley Boylan,	<i>Ann Arbor,</i>	Faculty.
Milo Jason Bradley,	<i>Reed City,</i>	M. Stewart, Jr.
Frank Homes Brown,	<i>Dansville, N. Y.,</i>	Faculty.
Delia Lucretia Chapin,	<i>Granby, Mass.,</i>	E. L. Peck.
Daniel Conley,	<i>Lapeer,</i>	E. Conley.
William Cleland Conley,	<i>Nashville,</i>	D. S. Conley.
George Clinton Crandall, B. S., Michigan Agricultural College.	<i>Linden,</i>	Faculty.
Elmer Arpad DeLipsey,	<i>Tisza Fured, Hungary,</i>	J. Karal.
Charles Faber,	<i>Pulaski, O.,</i>	Long & Riggs.
Robert Cleland Fair,	<i>Port Huron,</i>	Faculty.
George Hill Ferguson,	<i>Gobleville,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Mary Graves Finch,	<i>Gladwin,</i>	Faculty.
Arthur Ferdinand Fischer, B.S.,	<i>Northfield, Minn.,</i>	Faculty.
German English College.		
Frank Richard Gardiner,	<i>Ann Arbor,</i>	Faculty.
Willie Clarence Gates,	<i>Clifford, Pa.,</i>	Faculty.
George Clifton Gay,	<i>Eagle Bridge, N. Y.,</i>	Faculty.
Charles Augustus Gottman,	<i>Beech,</i>	Faculty.
John Gould,	<i>Colorado Springs, Col.,</i>	Faculty.
Samuel H. Graham,	<i>Cedar Falls, Ia.,</i>	Faculty.
Mary Theresa Greene,	<i>Pike, N. Y.,</i>	Faculty.
Elmer Ellsworth Hagler,	<i>Virden, Ill.,</i>	G. N. Kreider.
Emmett Austin Hall,	<i>Folk, O.,</i>	S. B. McGarran.
Delphine Hanna,	<i>Fairport, N. Y.,</i>	D. A. Sargent.
John Daniel Hare, M. S.,	<i>Mt. Pleasant, Ia.,</i>	A. W. McClure.
Iowa Wesleyan University.		
Emma Wheat Hastings,	<i>Quincy,</i>	E. A. Follansbee.
Wilber Stephen Henderson,	<i>Port Huron,</i>	Faculty.
Minnie Agnes Howard,	<i>Kalamazoo,</i>	Faculty.
John Gerrit Huizinga,	<i>Holland,</i>	T. G. Huizinga.
George Malcolm Hull,	<i>Brighton,</i>	Faculty.
Albert Milton Humber,	<i>Dundee,</i>	K. M. Gunsolus.
John H. Hunt,	<i>Patterson, Kan.,</i>	Faculty.
George William Ingham,	<i>Algona, Ia.,</i>	Faculty.
Joseph Philip Jones,	<i>Dundee,</i>	H. F. Ewers.
Napoleon Dudley Kean,	<i>Olathe, Kan.,</i>	Faculty.
George Frederic Keiper, A.B.,	<i>LaFayette, Ind.,</i>	C. B. Keiper & G. F. Beasley.
De Pauw University.		
Mary Knauf,	<i>Sylvan,</i>	G. W. Palmer.
Milton Jennea Longworth,	<i>Spencerville, O.,</i>	J. B. Funk.
Asbury Nelson Loper, M. S.,	<i>Kossuth, Ia.,</i>	D. W. Lunbeck.
Iowa Wesleyan University.		
Frank D. Lydick,	<i>Paris, Ill.,</i>	Faculty.
Lilly MacGowan,	<i>West Liberty, Ia.,</i>	Faculty.
Elizabeth McNutt,	<i>Hastings,</i>	Faculty.
John Jacob Marker,	<i>Wayne,</i>	T. Morrison.
Ettie McCaughna,	<i>Ann Arbor,</i>	Faculty.
Mary McConahy,	<i>Durham, Wis.,</i>	Faculty.
Allan J. McDonald,	<i>Black River,</i>	Faculty.
Eva Elizabeth McKnight,	<i>Sterling Valley, N. Y.,</i>	Faculty.
William Goldsmith McLachlan, A. B.,	<i>Wardsville, Ont.,</i>	Faculty.
Toronto University.		
Malcolm Grame McNiven,	<i>Blenheim, Ont.,</i>	J. Samson.
Louis Kuichling Mezger,	<i>Rochester, N. Y.,</i>	Faculty.
David Henry Miller,	<i>Lacey,</i>	A. L. Van Horn.
Robert Eugene Miller,	<i>Leyden, N. Y.,</i>	Faculty.

STUDENTS.

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NAME.	RESIDENCE.	PRECEPTOR.
William Levi Moore,	<i>Grand Rapids,</i>	G. W. Lowry.
Mary Elizabeth Newcomb,	<i>Blissfield,</i>	Faculty.
Edgar Warren Oswald,	<i>Ann Arbor,</i>	Faculty.
Judson Albert Palmer,	<i>Shetland, Ont.,</i>	Faculty.
William Mason Payne,	<i>Ann Arbor,</i>	Faculty.
Francis Malcolm Phillips,	<i>Salina, Kan.,</i>	W. A. Phillips.
Adelle Priscilla Pierce, A. M.,	<i>Saginaw,</i>	Faculty.
Albton College.		
Mary Hannah Ratcliffe,	<i>Medina, N. Y.,</i>	Faculty.
John David Riker, B.S. (Chem.)	<i>Ann Arbor,</i>	Faculty.
Arthur Sidney Rogers, Ph. C.,	<i>Vassar,</i>	R. Moore.
Arthur Shoudy Rowley,	<i>Kalamazoo,</i>	Faculty.
James Newton Saint,	<i>East Liverpool, O.,</i>	A. S. Brubaker.
Walter Neale Salisbury,	<i>Midland,</i>	A. D. Salisbury.
Arthur W. Scidmore,	<i>Grass Lake,</i>	M. H. Raymond.
Howard Sedgwick,	<i>Peoria, Ill.,</i>	H. T. Coffey.
Charles Schickle,	<i>Owosso,</i>	C. McCormick.
Roland Edward Skeel,	<i>Cleveland, O.,</i>	C. B. & W. H. Humiston.
James Ephraim Smedley,	<i>Belvidere, Ill.,</i>	N. J. Smedley.
Edgar Tripp Stephenson,	<i>Adrian,</i>	Faculty.
Patrick Joseph Sullivan,	<i>Grattan,</i>	Faculty.
William Sherman Taylor,	<i>Ann Arbor,</i>	V. C. Vaughan.
William Evert Visscher, A. B.,	<i>Holland,</i>	J. A. Mabbs.
Hope College.		
James Henry Waite,	<i>Centre White Creek, N. Y.,</i>	Faculty.
Fred Eugene Warren,	<i>Dexter,</i>	Faculty.
Agnes Clara Weaver, Ph. B.,	<i>East Saginaw,</i>	Faculty.
Stephen Andrew Whinery,	<i>Grand Rapids,</i>	Hake & Shepard.
Everett Jerome Whitehead, A. B.,	<i>Howell,</i>	J. W. Morton.
Curtis Carrington Williams,	<i>New Lisbon, O.,</i>	L. O. Williams.
Clarence Benjamin Wilson,	<i>Bradford, Vt.,</i>	Faculty.
Freeman E. Wilson,	<i>Eden, Ont.,</i>	Harvey & Stanley.
William D. Wood,	<i>Forest Grove, Ore.,</i>	Faculty.
Henry Middleton Woolman, B. S.,	<i>Crosswicks, N. J.,</i>	C. L. Dey.
Burlington College.		

SECOND YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Nelson Abbott,	<i>Lima, Ind.,</i>	J. F. Abbott.
Mary Louisa Ambrook,	<i>Boulder, Col.,</i>	C. Ambrook.
Henri Stranahan Babcock,	<i>Warren, Pa.,</i>	Faculty.
James Otis Ballard, Ph. B.,	<i>Detroit,</i>	D. S. Campbell.
LaFayette College.		
Joseph Grant Bartow,	<i>Williamston,</i>	Faculty.
William Russell Bates,	<i>Cincinnati, Ark.,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Martin Luther Belser,	<i>Ann Arbor,</i>	Faculty.
Francis Rand Blanchard,	<i>Lakeview,</i>	A. H. Forsyth.
Ray Martel Bradford,	<i>Monroe,</i>	Faculty.
Burton Clark Bradshaw,	<i>Roseburg,</i>	Faculty.
Arthur McKimmon Brown, A. B., Lincoln University.	<i>Raleigh, N. C.,</i>	Faculty.
Hugh Brown,	<i>Kincardine, Ont.,</i>	Faculty.
Ruth Ophelia Bryant,	<i>Battle Creek,</i>	Faculty.
George Henry Cattermole,	<i>La Harpe, Ill.,</i>	Faculty.
William Corpron,	<i>Strathroy, Ont.,</i>	Faculty.
John Garner Craig,	<i>Sarnia, Ont.,</i>	J. F. Edwards.
Annie Wood Croacher,	<i>New Bedford, Mass.,</i>	H. W. Webster.
Harry Lee Darms,	<i>Stillwater, Minn.,</i>	C. M. Marshall.
Edward Clement Davidson,	<i>LaFayette, Ind.,</i>	Faculty.
Charles Edwy Decker,	<i>Battle Creek,</i>	A. W. Alvord.
Pedro del Valle,	<i>San Juan, Porto Rico,</i>	Faculty.
William Leeroy Dunn, Ph. C.,	<i>Ann Arbor,</i>	Faculty.
Frederick B. Dunnigan,	<i>Louisville, N. Y.,</i>	A. L. Gagnon.
Daniel Dwyer,	<i>Honesdale, Pa.,</i>	Faculty.
William Henry Fisher,	<i>Toledo, O.,</i>	A. W. Fisher.
William Lucas Ford,	<i>Coldwater,</i>	Faculty.
Thomas Reese Foster,	<i>Watseka, Ill.,</i>	Faculty.
William Joseph Furness,	<i>Ogdensburg, N. Y.,</i>	W. S. Daley.
Thomas Henry Gafney,	<i>Elkhart, Ind.,</i>	R. Q. Haggerty.
Fletcher Gardner,	<i>Bedford, Ind.,</i>	Faculty.
Lucius Orange Gibson,	<i>Eaton Rapids,</i>	C. N. Hayden.
Dennis Fred Goo,	<i>Franklinville, N. Y.,</i>	H. D. Walker.
Frank Millard Gowdy,	<i>Union Pier,</i>	F. F. Sovereign.
Frederic Joseph Graham,	<i>Mt. Pleasant,</i>	Faculty.
Daniel Philip Grant,	<i>Burlington, Ind.,</i>	Faculty.
Harry Edmund Greene, B. S., Wabash College.	<i>Crawfordsville, Ind.,</i>	A. F. Schafer.
John Greenshields, A. B.,	<i>Romeo,</i>	G. C. Huber.
Howard Albertus Grube,	<i>Coldwater,</i>	Faculty.
Van Henry Gwinn,	<i>Glenwood, W. Va.,</i>	E. W. Grover.
Edward Warren Henderson,	<i>Potsdam, N. Y.,</i>	J. S. McKay.
Joseph Jefferson Henderson,	<i>Elko, Nev.,</i>	Faculty.
Della Hertzsch,	<i>Jeffersonville, Ind.,</i>	J. Ingram.
George Jacob Hirth, Ph. C.,	<i>Ann Arbor,</i>	V. C. Vaughan.
Ralph Oliver Hollister,	<i>Ovid,</i>	Faculty.
James Hosking,	<i>Hancock,</i>	A. M. Wheeler.
Loron Whitney Howk, A. B., University of Rochester.	<i>Ontario, N. Y.,</i>	A. P. Maine.
Clinton DeWitt Hubbard,	<i>Belleville, N. Y.,</i>	Faculty.
Fannie Burton Hurd,	<i>Water Gap, Pa.,</i>	F. W. Hurd.

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Edwin August Jarecki,	<i>Erie, Pa.,</i>	Faculty.
Addie Capitola Johnson,	<i>Battle Creek,</i>	Faculty.
Jay Ellsworth Johnston, B. S., Monmouth College.	<i>Washington, Pa.,</i>	Faculty.
Thomas Ap Roger Jones, A.B., Bethany College.	<i>Pine Grove, Ky.,</i>	S. W. Willis.
Charles Edward Kerney,	<i>Ann Arbor,</i>	Faculty.
Guy Lincoln Kiefer, A. B.,	<i>Detroit,</i>	C. Bonning.
John Henry Kimble, Ph. B., Adrian College.	<i>Manchester, O.,</i>	J. W. Guthrie.
Lewis Charles Knapp,	<i>Ida,</i>	W. F. Knapp.
Dryden Hemingway Lamb,	<i>Dryden,</i>	H. McColl.
Abram Leenhouts,	<i>Zeeland,</i>	Faculty.
Charles Hermann Letterman,	<i>Altoona, Pa.,</i>	Faculty.
Robert Ernest Lewis,	<i>Ann Arbor,</i>	Faculty.
Samuel Sebastian Lindsay,	<i>Colesburg, Ia.,</i>	J. J. Lindsay.
Frank Lyons,	<i>Detroit,</i>	T. Lyons.
Julia Anna Macdonald,	<i>St. George, Utah,</i>	E. R. Shipp & E.B. Ferguson.
Mary Elizabeth MacLeod,	<i>St. John, N. B.,</i>	Faculty.
Donald Macrae, Jr.,	<i>Council Bluffs, Ia.,</i>	Faculty.
Horace Albert Macy,	<i>Sheridan, Ind.,</i>	Faculty.
David Powrie Maitland,	<i>Sarnia, Ont.,</i>	Faculty.
George Edward McAvoy,	<i>Muskegon,</i>	T. D. Quinn.
Martin Duncan McCall,	<i>Hancock,</i>	Faculty.
Emma Louise McCollum,	<i>Clinton,</i>	Faculty.
Colin Bancroft McKenzie,	<i>Nairn, Ont.,</i>	Faculty.
James Archibald McNiven,	<i>Blenheim, Ont.,</i>	J. Samson.
Francis Morley Michael,	<i>Toronto, Ont.,</i>	Faculty.
Charles Clay Miller,	<i>Aylmer, Ont.,</i>	McClay & Kingston.
James Ralph Montgomery,	<i>Grand Rapids,</i>	A. J. Wallace.
Willet Abraham Mumbrue,	<i>Homer,</i>	Faculty.
Harry Joseph O'Connell,	<i>Springfield, Ill.,</i>	Faculty.
Julia Alice Peterson,	<i>Bay City,</i>	Faculty.
Robert Bruce Preble, A. B.,	<i>Ann Arbor,</i>	Faculty.
Samuel Ferdinand Price,	<i>Grand Ledge,</i>	Faculty.
William Gifford Rice,	<i>Placerville, Cal.,</i>	Faculty.
John Henry Rishmiller,	<i>St. Paul, Minn.,</i>	Smith & Abbott.
Fred William Robinson,	<i>Sturgis,</i>	Faculty.
Mark Rockwell, Ph. C.,	<i>Corey,</i>	Faculty.
Don Alphonso Root,	<i>Dubuque, Ia.,</i>	Faculty.
Frank Ladd Saylor,	<i>Antwerp, O.,</i>	B. E. Miller.
John Schurr,	<i>Hutchinson, Kan.,</i>	Faculty.
Yusiro Senshu,	<i>Tokio, Japan,</i>	Faculty.
John William Shaper, Ph. C.,	<i>Canajoharie, N. Y.,</i>	Faculty.
William Shaw,	<i>Ann Arbor,</i>	Faculty.

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Helen Smith,	<i>Middlebury, Vt.,</i>	Faculty.
Mary Coffield Smith,	<i>Hastings,</i>	Faculty.
Rachael Anna Groff Smith,	<i>Sippo, O.,</i>	Faculty.
John William Smoot,	<i>Pleasanton, Kan.,</i>	R. J. Peare.
Walter Hamilton Snyder,	<i>Dunnings, Pa.,</i>	S. W. Lamoreaux.
Willard Ralph Starks,	<i>Chatham, N. Y.,</i>	Faculty.
Charles Spurgeon Stewart,	<i>Garrett, Ind.,</i>	J. F. Thompson.
Peter Stewart,	<i>Hadley,</i>	Faculty.
Charles Augustus Stimson,	<i>Eaton Rapids,</i>	H. Walter.
William Issachar St. John, Ph. C.,	<i>Highland,</i>	Faculty.
Charles Milton Storch,	<i>Milan, O.,</i>	Faculty.
Eugene Silas Strout,	<i>St. Paul, Minn.,</i>	J. C. Adams.
May Belle Stuckey,	<i>Ann Arbor,</i>	Faculty.
Clark Sutherland,	<i>Oxford,</i>	Faculty.
Yorizo Suzuki,	<i>Tokio, Japan,</i>	Faculty.
Tei-ichi Takeishi,	<i>Oita Ken, Japan,</i>	T. Mogi.
John Clifton Taylor,	<i>Lebanon, Conn.,</i>	Faculty.
Frank Melvin Thoms,	<i>Williamston,</i>	Faculty.
Frank Burr Tibbals, A. B.,	<i>New Haven, Conn.,</i>	Faculty.
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Edward Henry Troy,	<i>Caledonia,</i>	J. I. Chandler.
James Matthew Van der Ven,	<i>Grand Rapids,</i>	S. A. Boot.
Joseph Van Kirk,	<i>Elizabeth, Pa.,</i>	Faculty.
William P. Walter,	<i>Bay City,</i>	Faculty.
Aldred Scott Warthin, A. B.,	<i>Indianapolis, Ind.,</i>	Faculty.
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Percy Ruttan Wood,	<i>Stuart, Ia.,</i>	Faculty.
Simon Menno Yutzy,	<i>Meyersdale, Pa.,</i>	Faculty.

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Ezra T. Abbott,	<i>Cadmus,</i>	Faculty.
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Charles Hudson Angell,	<i>Grand Haven,</i>	Faculty.
Clayton W. Armitage,	<i>Newmarket, Ont.,</i>	Faculty.
James Meade Atkinson,	<i>Warren, O.,</i>	Faculty.
Victor Bodine Ayers,	<i>Detroit,</i>	Faculty.
Nettie Estella Bainbridge,	<i>Columbia City, Ind.,</i>	Faculty.

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Helen Baldwin, A. B., Wellesley College.	<i>South Canterbury, Conn.,</i>	Faculty.
Emil Fred Baur, Jr.,	<i>Ann Arbor,</i>	Faculty.
Edward Beaupre,	<i>Port Dover, Ont.,</i>	Faculty.
Bertram Henry Beckwith,	<i>Norvell,</i>	D. Hyndman.
William Herman Bell,	<i>Bellevue, O.,</i>	G. S. Lanterman.
Emily Augusta Benn, A. B.,	<i>East Saginaw,</i>	Faculty.
William Edmund Bentley,	<i>Deanville,</i>	Faculty.
Thomas Blair,	<i>Chesley, Ont.,</i>	Faculty.
James Henry Bogan,	<i>Mackinac,</i>	Faculty.
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John Aaron Broberg,	<i>Alabama, Wis.,</i>	Faculty.
Thomas Earl Burgess,	<i>Lyons, O.,</i>	Faculty.
George Washington Burrier,	<i>Fowlerville,</i>	G. W. Langford.
Arthur Porter Burroughs,	<i>Galesburg,</i>	O. F. Burroughs.
Morell Deloss Cadwell,	<i>Padanaram, O.,</i>	Faculty.
Wilson Canfield,	<i>Eaton Rapids,</i>	Faculty.
Henrietta A. Carr,	<i>Eaton Rapids,</i>	C. P. Ganung.
John Baptist Casello,	<i>Port Huron,</i>	Faculty.
Charles Sylvester Chadwick,	<i>Chelsea,</i>	Faculty.
Shadrach Chaffin,	<i>Vinton, Ia.,</i>	Faculty.
Lemuel Churchill, B. S., Michigan Agricultural College.	<i>Three Oaks,</i>	O. Churchill.
Orton Horace Clark,	<i>Grass Lake,</i>	Faculty.
Charles DeWitt,	<i>Albion,</i>	Faculty.
Katherine Richards Collins,	<i>New Albany, Ind.,</i>	Faculty.
Joseph Franklin Condon,	<i>Dailey,</i>	Faculty.
Emma Diantha Cook,	<i>Ann Arbor,</i>	Faculty.
Galen Greenfield Crozier,	<i>Ann Arbor,</i>	Faculty.
Daniel Wallace Culp, A. B., Biddle University.	<i>Union, S. C.,</i>	Faculty.
Daniel Devine Cunningham, LL. B.,	<i>Hinsdale, N. H.,</i>	Faculty.
Ernest Haven Curtis,	<i>Detroit,</i>	Faculty.
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John Halvor Dent,	<i>New York, N. Y.,</i>	Faculty.
Fred Norton Dewey, A. B., Hillsdale College.	<i>Fremont, Ind.,</i>	Faculty.
John William Dobson,	<i>Cerro Gordo, Ill.,</i>	Faculty.
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Edwin Robert Espie,	<i>Mosherville,</i>	Faculty.

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William Davis Field,	<i>Shelburne Falls, Mass.,</i>	Faculty.
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Mary Hopkins Fletcher,	<i>Bell, Ky.,</i>	Faculty.
Anna Maria Flynn,	<i>Ann Arbor,</i>	E. H. Flynn.
Samuel Gates Foster,	<i>Scottsburg, N. Y.,</i>	Faculty.
Augustus William Foy,	<i>Ludington,</i>	Faculty.
Lucy Woodward Gardner,	<i>Bedford, Ind.,</i>	Faculty.
Howard Bishop Garner,	<i>Canby,</i>	Faculty.
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Hugh William Graham,	<i>Mt. Pleasant,</i>	Faculty.
Ernest William Haass,	<i>Detroit,</i>	Faculty.
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Reuben Maurits,	<i>Friesland,</i>	Faculty.
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George Washington Moran,	<i>Ann Arbor,</i>	Faculty.
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Walter Noyes,	<i>St. Joseph, Mo.,</i>	E. D. Leavitt.
James Donaldson Parker, A. B.,	<i>Fayette, Ia.,</i>	Faculty.
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Albert Summerfield Payne,	<i>Port Clinton, O.,</i>	Faculty.
Daniel Alvin Pelton, B. S.,	<i>Lansing,</i>	Faculty.
Michigan Agricultural College.		
John Thomas Pickerill,	<i>Eureka, Ill.,</i>	L. A. Ferry.
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James Edgar Prior,	<i>Chicago, Ill.,</i>	G. Steager.
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Frank Randolph,	<i>White Pigeon,</i>	Faculty.
Augustus Walter Reed,	<i>East Saginaw,</i>	Faculty.
David Riesman,	<i>Portsmouth, O.,</i>	Faculty.
Samuel Beatty Robb,	<i>Orangeville, Ont.,</i>	W. J. Hare.
William Anderson Royer,	<i>LaGrange, Ind.,</i>	Faculty.
Frank Ernest Ruggles,	<i>Hillsdale,</i>	King & Moore.
Georgiana Augusta Rumbley,	<i>Philadelphia, Pa.,</i>	C. B. Purvis.
John Schee,	<i>Westby, Wis.,</i>	J. K. Schreiner.
Frederick William Schettler,	<i>Kalamazoo,</i>	Faculty.
Justin Henry Schopp,	<i>Rochester, N. Y.,</i>	C. & J. C. Buckley.
Ranney Converse Scott,	<i>Ann Arbor,</i>	Faculty.
Louis Ernst Seyffardt, Ph. C.,	<i>St. Louis, Mo.,</i>	Faculty.
William A. Shannon,	<i>Mercer, Pa.,</i>	Faculty.
Edwin Elmer Sheffield, Ph. B.,	<i>Bellevue, O.,</i>	Faculty.
Denison University.		
Henry Stultz Sheffield,	<i>Bellevue, O.,</i>	Faculty.
George William Slayton,	<i>Pineville, Ore.,</i>	Faculty.
Malcolm M. Smith,	<i>Fernhill, Ont.,</i>	Faculty.
Jennie Cady Solis,	<i>St. Clair,</i>	Faculty.
Soren Sorenson,	<i>Racine, Wis.,</i>	G. M. Steele.
Charles Allond Soule,	<i>Eaton Rapids,</i>	J. M. Gallery.
LeRoy Southmayd,	<i>Ann Arbor,</i>	Faculty.
Julia Ione Stannard,	<i>Dexter,</i>	Faculty.
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Henry Charles Valentine,	<i>Plymouth,</i>	L. F. Hatch.
Frank Alsworth Waples, B. S.,	<i>Ann Arbor,</i>	Faculty.
Alexander McPherson Warren,	<i>Ridgetown, Ont.,</i>	Faculty.
Edward Crawford Warren,	<i>Cass City,</i>	Faculty.
John Davis Watterson,	<i>Kalida, O.,</i>	Faculty.
Edgar Sackett Wells,	<i>Portsmouth, O.,</i>	Faculty.
Dirk John Werkman, A. B.,	<i>Holland,</i>	Faculty.
Hope College.		
William Walter Wertenberg,	<i>San Antonia, Mo.,</i>	Faculty.
Jacob Frederick Wesh,	<i>Brooklyn,</i>	Faculty.
Anders Albert Westeen,	<i>Menekaunee, Wis.,</i>	Faculty.
May Weston,	<i>Kewanee, Ill.,</i>	L. S. Ayers.
Stanley Wheelock,	<i>Seahorn, Ill.,</i>	Faculty.
James Madison Willis,	<i>Bloomington, O.,</i>	Faculty.
Hubert Wallace Wilson,	<i>La Porte, Ind.,</i>	Faculty.
John Graham Wilson,	<i>Factoryville, Pa.,</i>	Faculty.
Charles Fremont Wixom,	<i>Italy, N. Y.,</i>	G. L. Preston.
Nathaniel Ferdinand Yates,	<i>New Lisbon, N. Y.,</i>	W. T. Bassett.
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STUDENTS.

RESIDENT GRADUATES.

NAME.	RESIDENCE.
Takanosuke Iriye, LL. B., Tokio University.	Tokio, Japan.
Harvey Arthur Penny, LL. B.,	East Saginaw.
William Vance Rinehart, LL. B.,	Seattle, Wash.
Reitaro Takano, LL. B.,	Tokio, Japan.
John Herbert Winans, LL. B., Columbia College.	Asbury Park, N. J.

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Van Rensselaer Brown,		Arvilla, N. Dak.
Benjamin Wade Burleigh, A. B., Yankton College.		Yankton, S. Dak.
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John Mousley Cannon,		Salt Lake City, Utah.
William Francis Carter,		Farmington, Mo.
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Francis William Duha,	<i>Chicago, Ill.</i>
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Charles Place Evans,	<i>Evergreen, Col.</i>
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Katsutaro Fukushima,	<i>Shidzuoka, Japan.</i>
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National Normal University.	
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Rodolphus Waite Joslyn,	<i>Elgin, Ill.</i>
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George Anthony Katzenberger,	<i>Greenville, O.</i>
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Edgar Elmer Kelsey,	<i>Ann Arbor.</i>
George Marshall Kendall,	<i>Ann Arbor.</i>
Edward Joseph Kent,	<i>Latrobe, Pa.</i>
James Wilson Kern, A. B.,	<i>Eureka, Ill.</i>
Eureka College.	
Charles Theron King,	<i>Watrousville.</i>
Charles Allee Kinnear, B. S.,	<i>Seattle, Wash.</i>
University of Washington.	
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Westminster College.	

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Jerome Chaffee Moffett,	<i>Ann Arbor.</i>
Torajiro Mogi,	<i>Yokohama, Japan.</i>
Clarence Monaghan,	<i>Tecumseh.</i>
Frank Cleveland Moore,	<i>Eau Claire, Wis.</i>
Charles Marion Morgan,	<i>De Soto, Ill.</i>
John Vincent Morgan,	<i>Nebraska City, Neb.</i>
Lloyd Walker Moultrie,	<i>San Francisco, Cal.</i>
Thomas Mulvihill,	<i>Berlin.</i>
Orrice Abram Murdock,	<i>Beaver City, Utah.</i>
George Murray,	<i>Hope, N. Dak.</i>
Shotaro Ozawa,	<i>Kanagawa Ken, Japan.</i>
Charles Anson Palmer, Ph. B., San Joaquin Valley College.	<i>Woodbridge, Cal.</i>
Lewis Wallace Parker, B. L.,	<i>Dubuque, Ia.</i>
Walter Cornelius Parmenter,	<i>Lima, O.</i>
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Frank Pierce,	<i>Buffalo, Mo.</i>
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U. Grant Race,	<i>Ann Arbor.</i>
George Quayle Rich,	<i>Paris, Idaho.</i>
Daniel Brigham Richards,	<i>Salt Lake City, Utah.</i>
Benjamin Franklin Richardson,	<i>Elkhart, Ind.</i>
Jesse Winfield Riddle,	<i>Cannelton, Ind.</i>
George William Roth,	<i>Sheldon, Ia.</i>

NAME.	RESIDENCE.
Nestor Rummons, A. B., Central Wesleyan College.	<i>Truesdail, Mo.</i>
Francis Aloysius Schilling,	<i>San José, Cal.</i>
William Schlagenhauf, B. S., German College.	<i>Mt. Pleasant, Ia.</i>
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Percy Ansel Walling,
Jay Henry Walrath,
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Archie E. Watson,
Frederick Curtenius Wetmore,
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Olivet College.
Judd Yelland, Att'y,
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<i>Manchester.</i>
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<i>Jonesville.</i>
<i>Peru, Ind.</i>
<i>La Harpe, Ill.</i>
<i>Beaver Falls, Pa.</i>
<i>Independence, Mo.</i>
<i>Lyons, Neb.</i>
<i>Kokomo, Ind.</i>
<i>Breckenridge, Minn.</i>
<i>Detroit.</i>
<i>Howell.</i>
<i>Peoria, Ill.</i>

JUNIORS.

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Lysle Ivor Abbott,
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William Howard Alexander,
William Frederick Allen,
Pliny William Andrews,
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<i>Sunny Side, Pa.</i>
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<i>Saginaw.</i>
<i>Ottawa, O.</i>
<i>Cleveland, O.</i>
<i>Toledo, O.</i>
<i>St. Paul, Minn.</i>
<i>Topeka, Kan.</i>
<i>Ann Arbor.</i>

NAME.	RESIDENCE.
Harlan Martin Bird,	<i>Menominee.</i>
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Edwin Almarian Blakeslee,	<i>Galien.</i>
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George Westfall Brown,	<i>Pittsburgh, Pa.</i>
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John Allen Foster,	<i>Auburn, N. Y.</i>
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Franklin Thomas Hammerle,	<i>Hamilton, Ont.</i>
Charles Mason Hamper,	<i>Greenville.</i>
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Harry Eugene Hooker,	<i>Charlotte.</i>
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Thomas W. Hughes,	<i>St. Thomas, Ont.</i>
John Clarence Huntoon,	<i>Hamilton, Ont.</i>
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Harry Irwin,	<i>West York, Ill.</i>
Harry Dimmick Jewell,	<i>Cedar Springs.</i>
Henderson Franklin Johns,	<i>Oakland, Ia.</i>
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Oliver Morton Jones, B. S., Purdue University.	<i>Rob Roy, Ind.</i>
William James Just,	<i>Ann Arbor.</i>
Jacob Bernard Kaufman,	<i>Indianapolis, Ind.</i>
William Kaufman,	<i>Allegheny, Pa.</i>
Frank Addison Kelley,	<i>Terre Haute, Ind.</i>
John Henry Kelley,	<i>Ann Arbor.</i>
Arthur Jay Kendall,	<i>Ann Arbor.</i>
Charles Oscar Kundson,	<i>Davis, Ill.</i>
William Landiss,	<i>Carrollton, Ill.</i>
Henry Lardner, Jr.,	<i>Niles.</i>
John Amby Largent,	<i>Urbana, Ill.</i>
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Thomas David Lewis, B. S., University of Deseret.	<i>Salt Lake City, Utah.</i>
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Will Orville Lindley,	<i>Chillicothe, O.</i>
W. Ellsworth Lindsey,	<i>Mahomet, Ill.</i>
Sam Elliot Low,	<i>Lincoln, Neb.</i>
Francis James Lynch,	<i>Titusville, Pa.</i>

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George Walter Manion,	Carsonville.
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John Sandfield McDonald,	Grand Rapids.
Joseph Samuel McGeagh,	Pittsburgh, Pa.
James Clifford McNally,	Allegheny, Pa.
Arthur Rollin McRitchie,	Solon, O.
Richard Leslie Melton,	Kansas City, Mo.
Jehu Baker Middlecoff,	Ann Arbor.
Charles Wilbur Middlekauff,	Forreston, Ill.
Charles Vernon Miles,	Beatrice, Neb.
Charles Frederick Miller,	Knorr, O.
Hugh John Miller,	Douglass, Minn.
John Marshall Miller,	Jacksonville, Ill.
William Manning Miller,	Bay City.
Oscar Mitchell, B. S., Northern Illinois College.	Athensville, Ill.
U. S. Grant Mitchell,	St. Paris, O.
John Henry Mohr,	Baker's Summit, Pa.
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Ira More,	Los Angeles, Cal.
Roland Fowler Moseley,	Princeton, Ill.
Charles Webster Munger,	Franklin, O.
John Nicholas Myler,	Cleveland, O.
Clyde Vallandigham Nafe, A. B.,	Rochester, Ind.
John Rush Newcomer,	Polo, Ill.
George Lowe Nye,	De Witt, Ia.
Odie Odell Oldfather,	Warsaw, Ind.
Walter Bernard O'Neill,	Detroit.
Henry Louis Ottemeier,	Oneill, Neb.
Eber Ward Owen,	Ypsilanti.
Havilah Haworth Owen,	Westfield, Ind.
James Alexander Park,	Detroit.
Charles Lucius Parker, A. B., Upper Iowa University.	Bathgate, N. Dak.

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Marion George Paul,	<i>Ann Arbor.</i>
Charles Borromeo Pavlicek, A. B., B. S., Northern Illinois College.	<i>Chicago, Ill.</i>
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Melvin Emerson Peters,	<i>Coldwater.</i>
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Harry Dalton Rankin,	<i>Pittsburgh, Pa.</i>
Charles Marshall Reader,	<i>Cleveland, O.</i>
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Leslie Baker Roberston,	<i>Ogden Centre.</i>
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DeWitt Clinton Smith,	<i>Galesburg.</i>
John Davis Smith,	<i>Marseilles, Ill.</i>
Walter Denton Smith,	<i>Galesburg.</i>
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Walter Scott Snyder,	<i>Brooklyn, Ia.</i>
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John Stansbury,	<i>Braidwood, Ill.</i>
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Genko Tanaka,	<i>Yamagata Ken, Japan.</i>
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William Edward Thompson,	<i>Detroit.</i>
Theodore Walter Todd, A. B.,	<i>Monmouth, Ill.</i>
Monmouth College.	
Willis Leroy Townsend,	<i>May.</i>
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Emery Brainerd Tyler,	<i>San Bernardino, Cal.</i>
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John Benjamin Vaughn,	<i>Scottville, Ill.</i>
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William Henry Wadley,	<i>Denver, Col.</i>
Alvil Oscar Wagoner,	<i>Orion.</i>
Isaac Harry Waixel,	<i>Chicago, Ill.</i>
Jesse Lester Waller,	<i>Stromsburg, Neb.</i>
Will Frank Wanless,	<i>Denver, Col.</i>
Belmont Waples,	<i>Ann Arbor.</i>
Hango Watanabe,	<i>Kagawa Ken, Japan.</i>
Herman Henry Wefel, Jr.,	<i>Manly, Ia.</i>
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Arthur Percival Will,	<i>Toronto, Ont.</i>

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Thomas Jefferson Wilson,	<i>Beaver Falls, Pa.</i>
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Francis Woodbridge,	<i>Detroit.</i>
Thomas Arthur Woodhall,	<i>Denver, Col.</i>
Thomas Lyman Yancey,	<i>Newark, Mo.</i>

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Derick Chandler Dodge,	<i>Sand Lake.</i>
Simon Peter Domer,	<i>Columbus, O.</i>
William Sherman Emmons,	<i>Salem, O.</i>
Joseph Feltwell,	<i>Pittsburgh, Pa.</i>
Samuel Henry Goodall,	<i>Marion, Ill.</i>
Daniel Whilldin Hand,	<i>St. Paul, Minn.</i>
George Watson Herriott,	<i>Federal, Pa.</i>
Philip Markham Kerridge,	<i>Adrian.</i>
Chancey Robert Lamb,	<i>Clinton, Ia.</i>
Patrick Dolan Lillard,	<i>Nevada, Mo.</i>
Robert Douglas MacLeod, A. B.,	<i>Leadville, Col.</i>
Edward John McKenna,	<i>Pittsburgh, Pa.</i>
Charles Herbert Pierce, A. B., University of Colorado.	<i>Denver, Col.</i>
Francis Marion Robles,	<i>Tampa, Fla.</i>
William Richard Rummeler, B. S., Michigan Agricultural College.	<i>Detroit.</i>
James Samuel Shortle, B. S., Purdue University.	<i>Frankfort, Ind.</i>
Alvin Curtis Spindler,	<i>Washington, Pa.</i>
Thames Seamon Tripp, Att'y,	<i>Hay Springs, Neb.</i>

The following students, enrolled in the Department of Literature, Science, and the Arts, also pursue studies in the Department of Law.

Guy Dale Duncan,	<i>Longmont, Col.</i>
Robin Ernest Dunbar,	<i>South Bend, Ind.</i>

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Jacob Leonard Haner,	<i>Plain City, O.</i>
William Kilpatrick Maxwell,	<i>Cincinnati, O.</i>
Warren French Mills, LL. B.,	<i>San Francisco, Cal.</i>
Harry Nelson Quigley,	<i>Richmond, O.</i>
William Butterfield Ramsey,	<i>Detroit.</i>
Jacob Ringer,	<i>Chicago, Ill.</i>
Walter Savage Stillman,	<i>Council Bluffs, Ia.</i>
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SECOND YEAR STUDENTS.

NAME.	RESIDENCE.
Robert Bruce Armstrong,	<i>East Saginaw.</i>
George Henry Daniel Baert,	<i>Zeeland.</i>
Charles Wilson Baker,	<i>Mt. Vernon, O.</i>
Fred Wilford Baker,	<i>Saginaw.</i>
Samuel Robert Boyce,	<i>Cambridge.</i>
William Elbert Collins,	<i>Farmington.</i>
Joseph Michael Gries,	<i>Wabash, Ind.</i>
George Spencer Hawes,	<i>Parma.</i>
Charles William Hollis,	<i>Manchester.</i>
Louis Henry Huber,	<i>Ottawa, O.</i>
Ernest Myers Jarman,	<i>Trenton, Mo.</i>
Lyman Frederic Kebler,	<i>Ann Arbor.</i>
Maurice Sheehan Kirby,	<i>Grand Haven.</i>
Thomas Edward Kirby,	<i>Grand Haven.</i>
Theophil Klingmann,	<i>Dexter.</i>
Moritz M. Levy,	<i>Charlotte.</i>
Charles Edward Martzloff,	<i>Lancaster, N. Y.</i>
Ben J. McGuire,	<i>Trenton, Mo.</i>
Otto Paul Meyer,	<i>St. Louis, Mo.</i>
Thomas Jonathan Milner,	<i>Big Rapids.</i>
Herman George Niermann,	<i>Fort Wayne, Ind.</i>
Wallace Palmer,	<i>Tipton.</i>
Christian Purtscher,	<i>Lima, O.</i>
Will Mathias Scheuerman,	<i>Toledo, O.</i>
Oscar Frederick Schmid, Ph. B.,	<i>Ann Arbor.</i>
Charles Carnell Sherrard,	<i>Ada, O.</i>
Henry Alonzo Thayer,	<i>Sherman, N. Y.</i>
William Isaac Tibbals,	<i>New Haven, Conn.</i>
Cora Louisa Wait,	<i>Traverse City.</i>
Dean M. Westfall,	<i>Ellensburg, Wash.</i>
Clarence H. Wise,	<i>Cedar Falls, Ia.</i>
Homer R. Wood,	<i>Tompkins.</i>
Roy Demas Young,	<i>Belleville, N. Y.</i>

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.
Arthur Winfield Adams,	<i>Chesaning.</i>
Shinichi Ando,	<i>Honolulu, Hawaiian Islands.</i>
William Fuller Ashley,	<i>Medina, O.</i>
William Royal Bacon,	<i>Sault Ste. Marie.</i>
Charles Potwin Beckwith, B. S.,	<i>Ann Arbor.</i>
Robert M. Berry,	<i>Huntington, Ind.</i>

NAME.	RESIDENCE.
Harry Lamont Bird,	<i>Highland.</i>
Fred Hathaway Borradaile, LL. B.,	<i>Paso del Norte, Mex.</i>
Perry Briggs,	<i>Eureka, Ill.</i>
Homer Burgess,	<i>Cambridge, O.</i>
Arthur Campbell,	<i>Crystal Falls.</i>
Joseph Edward Carmody,	<i>Watervliet.</i>
Fred Newton Chapel,	<i>Grand Blanc.</i>
Alfred Payson Churchill,	<i>Cleveland, O.</i>
John Ward Corbin,	<i>Little Rock, Ark.</i>
Franklin Cronkhite,	<i>Moore, Ont.</i>
Frank Frederick Davis,	<i>Washington, D. C.</i>
Orville Holmes Dove,	<i>Westfield, Ind.</i>
Benjamin H. Drake,	<i>Rochester, Ind.</i>
Leon Francis Freytag,	<i>Detroit.</i>
Otto Ralph Goodyear,	<i>Cleveland, O.</i>
Fred William Green,	<i>Albion.</i>
Joseph Clement Hearne,	<i>Lexington, Ky.</i>
John E. Hitchcock,	<i>Harrisville, N. Y.</i>
Louis Theodor Wilhelm Hogrefe,	<i>Portland, N. Dak.</i>
John Loren Hubbard,	<i>Waterloo.</i>
Frank Pomfret Husted,	<i>Albany, N. Y.</i>
Edward Morse Kennedy,	<i>Sturgis.</i>
Thomas Henry McGee,	<i>Farmington.</i>
Frank Hugh McGrath,	<i>Toledo, O.</i>
Joseph Francis Meloan,	<i>Pittsfield, Ill.</i>
Benjamin Lindley Murray,	<i>Ypsilanti.</i>
Frank J. Peck,	<i>Warren, O.</i>
Louis Matthews Peppler,	<i>Monroe.</i>
Oliver Clayton Reed,	<i>Toledo, O.</i>
John Reber,	<i>Winchester, Ind.</i>
Dorian Melancthon Russell,	<i>Sturgis.</i>
Walter Karl Schmidt,	<i>Grand Rapids.</i>
Frank Irving Shepherd,	<i>Kyles, O.</i>
Henry Fred Smith,	<i>Elyria, O.</i>
Henry Persse Snow,	<i>LeRoy, N. Y.</i>
Henry Vandervelde,	<i>Grand Rapids.</i>
Louis C. Van Gorden,	<i>Eaton Rapids.</i>
Garrie Green Van Schoonhoven,	<i>Salt Lake City, Utah.</i>
Edmund Felix Trempe,	<i>Sault Ste. Marie.</i>
Theodore Adam Wetzol,	<i>Ann Arbor.</i>
Jesse Monroe Wiswell,	<i>Decatur, Ill.</i>

Homœopathic Medical College.

FACULTY.

JAMES B. ANGELL, LL. D.,

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DEAN.

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CHARLES GATCHELL, M. D.,

CHARLES S. MACK, M. D.

OTHER INSTRUCTORS AND ASSISTANTS.

ROY S. COPELAND, M. D.,

VASHTI D. GARWOOD, M. D.,

WILLIAM H. HODGE, M. D.

STUDENTS.

RESIDENT GRADUATE.

NAME.	RESIDENCE.
William Malery Campbell, M. D., Detroit Homœopathic College.	Ann Arbor.

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
James Cordon Avery,	Dansville,	M. N. Avery.
Leigh Yerkes Baker,	Rochester, N. Y.,	J. M. Lee.
William Colfax Brownell,	Plymouth,	F. B. Adams.
Ernest Albert Clark,	Aylmer, Ont.,	G. F. Clark.
Anna Calista Clarke,	Athens, Pa.,	E. J. Beach.
Eva Alice Cunningham,	Crawfordsville, Ia.,	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Albert Smith Dabney, A. B., M. L., <i>Detroit</i> , Bethany College.		Faculty.
Mary Denison,	<i>Toledo, O.</i> ,	Faculty.
Francis Chipman Ford, A. B.,	<i>Niles</i> ,	A. O. Ullrey.
Harvey Elmer Hoffman,	<i>Nashville</i> ,	H. A. Barber.
Leslie Allen Howe,	<i>Jackson</i> ,	J. F. Brown.
Amelia Johnston,	<i>Strathroy, Ont.</i> ,	Faculty.
Alfred Bernard Jordan, .	<i>San Francisco, Cal.</i> ,	Faculty.
Alice Keefer,	<i>Strathroy, Ont.</i> ,	G. Henderson.
Frances Jennings Miner,	<i>Ann Arbor</i> ,	Faculty.
Mary Anna Morley,	<i>Rome</i> ,	Faculty.
Andrew Bodwell Nelles,	<i>Ingersoll, Ont.</i> ,	F. D. Canfield.
Grant Sherman Peck,	<i>Buchanan</i> ,	G. L. Bailey.
Paul Augustus Perrenoud,	<i>Alpena</i> ,	Faculty.
Everett Jay Phelps,	<i>Dexter</i> ,	E. F. Chase.
Lewis Frank Rice,	<i>Holt</i> ,	Faculty.
Fred Clyde Sanford,	<i>Mt. Pleasant</i> ,	F. H. Tyler.
Harriet Augusta Spinney,	<i>Detroit</i> ,	A. B. Spinney.

SECOND YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Arza Van Avery,	<i>Springport</i> ,	C. H. Dale.
Sarah Howard Bostwick,	<i>Lyons, N. Y.</i> ,	J. C. McPherson.
Arthur Wordsworth Burdick,	<i>Oakland, Cal.</i> ,	Faculty.
William Franklin Dean,	<i>Independence, Ia.</i> ,	Faculty.
Harvey Elmer Flint,	<i>Erie, Pa.</i> ,	J. F. Flint.
Bina Jane Hallock,	<i>Ann Arbor</i> ,	Faculty.
John Howard Harvey,	<i>Bellefonte, Pa.</i> ,	R. L. Dartt.
Charles William Kirtland,	<i>Rochester, Ind.</i> ,	C. Hector.
Emma Klein,	<i>Detroit</i> ,	Faculty.
Ciarence P. Lathrop,	<i>Hastings</i> ,	E. H. Lathrop.
Franklin Frees Lehman, A. B.,	<i>Madisonburg, O.</i> ,	Faculty.
James W. Losee,	<i>Pontiac</i> ,	Faculty.
Wallace Bruce Matthews,	<i>Hastings</i> ,	E. H. Lathrop.
Loueze Josephine Miller,	<i>Ann Arbor</i> ,	Faculty.
Myron Alanson Patterson,	<i>Holly</i> ,	W. N. Fowler.
Arnley Quackenbush,	<i>Mountain View, Ont.</i> ,	J. D. Tyrell.
Rebecca Williams Rogers,	<i>Pendleton, Ind.</i> ,	E. P. Rogers.
Jacob George Smith,	<i>Circleville, O.</i> ,	R. Morden.
Orlando Leon Sutherland,	<i>Three Oaks</i> ,	O. Churchill.
Frank Scott Tuthill,	<i>Liberty</i> ,	J. F. Brown.
Mary Emma Van Schoonhoven,	<i>Salt Lake City, Utah</i> ,	R. B. Pratt.
Guert Elmer Wilder,	<i>Chautauqua, N. Y.</i> ,	Faculty.
Clayton Willison,	<i>Hastings</i> ,	E. H. Lathrop.

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.	PRECEPTOR.
Charles William Behm,	<i>Grand Haven,</i>	J. N. Reynolds.
John Campbell Buell,	<i>Hanover,</i>	Faculty.
Nelson Hoyt Chamberlain,	<i>Oakland, Cal.,</i>	S. P. Burdick.
William Whittelsey Cheney, A. B.,	<i>Minneapolis, Minn.,</i>	Faculty.
University of Minnesota.		
Frank Eugene Dickinson,	<i>Dubuque, Ia.,</i>	Faculty.
Annie Bissell Dillon,	<i>Pittsburgh, Pa.,</i>	Faculty.
Jabez Dowler,	<i>Ann Arbor,</i>	Faculty.
Frank Wilmot French,	<i>Otsego,</i>	H. L. Miller.
Ernest Frank Gamble,	<i>Tecumseh,</i>	W. A. Frost.
Lewis Bradstreet Gardner,	<i>Rochester, N. Y.,</i>	J. M. Lee.
Clifford Joseph Harder,	<i>North Newberg,</i>	E. W. Harvey.
Jennie Hughes,	<i>St. Thomas, Ont.,</i>	Faculty.
Andrew Krumling,	<i>Francisco,</i>	Faculty.
John Alexander Leufestey,	<i>Strathroy, Ont.,</i>	Faculty.
Linal Rideout Lumby,	<i>Pontiac,</i>	Faculty.
Francis V. Martin,	<i>Three Oaks,</i>	Faculty.
Lizzie Metcalf,	<i>North Adams,</i>	Faculty.
Elmer Douglass Osinun,	<i>Pontiac,</i>	Faculty.
Fred Johnson Peck,	<i>Ansonia, Conn.,</i>	A. W. Phillips.
Charles Dwight Pullen,	<i>Otsego,</i>	H. L. Miller.
Ellen Searle,	<i>Berkshire, O.,</i>	J. B. Hunt.
Otho Sibley Stull, B. S. (M. E.),	<i>Rochester, N. Y.,</i>	J. M. Lee.
Anna Barrington Taylor,	<i>Toledo, O.,</i>	A. I. Sawyer.
Essington Tracy Trimmer, Jr.,	<i>Vicksburg,</i>	W. E. Clark.
Ida Clarke Woolsey,	<i>Toledo, O.,</i>	E. M. R. Garitt.

College of Dental Surgery.

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DEAN.

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WILLIAM H. DORRANCE, D. D. S.,

NELVILLE S. HOFF, D. D. S.,

JAMES N. MARTIN, Ph. M., M. D.

ASSISTANT.

LOUIS P. HALL, D. D. S.

STUDENTS.

SENIORS.

NAME.	RESIDENCE.	PRECEPTOR.
Walter Lent Allen,	<i>Ann Arbor,</i>	Faculty.
Merrill Danforth Bush,	<i>Watertown, N. Y.,</i>	C. W. Howard.
William Calhoun,	<i>Urania,</i>	Faculty.
Leo David Camp,	<i>Ann Arbor,</i>	Faculty.
Ernest Catt,	<i>London, Eng.,</i>	W. H. Dorrance.
Charles Eli Collamer,	<i>Flint,</i>	Miller & Hutchins.
Charles Floyd Cook,	<i>South Haven,</i>	H. D. Cook.
George Howe Copp,	<i>Plainwell,</i>	F. E. Howe.
Norman Kershaw Cox,	<i>Auckland, New Zealand,</i>	E. & H. Cox.
Charles Hugo Farman,	<i>San Francisco, Cal.,</i>	J. J. Birge.
Fred Dawson Fisher,	<i>Skipton, Eng.,</i>	J. Hargreaves.
Ida Gray,	<i>Cincinnati, O.,</i>	J. Taft.
John Jarius Green,	<i>Portland,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
John Joseph Giusti,	<i>San Francisco, Cal.,</i>	W. J. Younger.
Bertrand Francois Hall,	<i>Flint,</i>	Faculty.
Edgar Allen Honey,	<i>Charlotte,</i>	F. H. Honey.
William George Howley,	<i>Ann Arbor,</i>	Faculty.
John Barnet Keesing,	<i>Boston, Mass.,</i>	D. G. Williams.
Carolyn Murray McElroy,	<i>Delaware, O.,</i>	Steeves & Mitchell.
Melville Arthur Mason,	<i>Fort Wayne, Ind.,</i>	T. J. Mason.
Chester Cleveland Merriman,	<i>Beloit, Wis.,</i>	Clark & Meyers.
Reuben Wallace Miller,	<i>Ypsilanti,</i>	Miller & Hutchins.
Eli Louis Moore,	<i>Ann Arbor,</i>	Faculty.
George Northcroft,	<i>London, Eng.,</i>	Mitchell & Crall.
Henry Turner Osborne,	<i>Markham, Ont.,</i>	A. J. Robertson.
James Andrew Oswald,	<i>Ann Arbor,</i>	Faculty.
Albert John Rust,	<i>Chateaugay, N. Y.,</i>	J. W. Campbell.
Charles B. Scudder,	<i>Randolph, N. Y.,</i>	Faculty.
Alice Loyse Sherman,	<i>Lake Geneva, Wis.,</i>	Faculty.
William Hall Sieberst,	<i>San Francisco, Cal.,</i>	G. A. Christman.
Fred Cameron Sizelan,	<i>Cortland, N. Y.,</i>	G. H. Smith.
Mortimer F. Stever,	<i>Fairfield, Ia.,</i>	J. B. Monfort.
Fritz Bernard Tegener,	<i>Austin, Tex.,</i>	E. P. Stiles.
George T. Thuerer,	<i>Baraboo, Wis.,</i>	A. H. Gillett.
Victor Emmanuel Tuttle,	<i>Ann Arbor,</i>	Faculty.
Gerrit Henry Veldhuis,	<i>Overisel,</i>	B. J. Devries.
John Hardin Waterhouse,	<i>Delaware, O.,</i>	Steeves & Mitchell.
Charles Elmer Welch,	<i>Bloomfield, Ind.,</i>	W. H. H. Welch.
Gordon William Welch,	<i>Ann Arbor,</i>	W. H. Miller.
Harry Lloyd Williams,	<i>Ann Arbor,</i>	A. H. Gillett.
Paul Woolsey,	<i>Battle Creek,</i>	R. M. Speer.

JUNIORS.

NAME.	RESIDENCE.	PRECEPTOR.
Walter Horace Booth,	<i>Ann Arbor,</i>	Faculty.
Manuel Vicente del Valle,	<i>San Juan, Porto Rico,</i>	Faculty.
Rokus Christian Devries,	<i>Holland,</i>	F. G. Gillespie.
Arthur Aaron Deyoe,	<i>St. Clair,</i>	Faculty.
Frank Chester Dorrance,	<i>Ann Arbor,</i>	W. H. Dorrance.
Fred Edward Eberbach,	<i>Ann Arbor,</i>	W. W. Nichols.
Charles Henry Edwards,	<i>Ypsilanti,</i>	J. A. Watling.
Walter Jesse Green,	<i>Battle Creek,</i>	A. M. Phillips.
Frank Sidney Henry,	<i>Jacksonville, Fla.,</i>	F. E. Buck.
William Edward Kearns,	<i>Ann Arbor,</i>	Faculty.
Gorden Grant McCoy,	<i>Van Wert, O.,</i>	Faculty.
Austin McGuire,	<i>Ann Arbor,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Clinton Floyd Metcalf,	<i>Lansing, Ia.,</i>	Faculty.
Arthur Werner Mueller,	<i>Milwaukee, Wis.,</i>	H. R. Johnson.
Pascal Pratt Nelson,	<i>Ann Arbor,</i>	Faculty.
Fred George Olp,	<i>Ann Arbor,</i>	Faculty.
Charles Sigfried Rudolph Osius,	<i>Detroit,</i>	Faculty.
Michael Moore Park,	<i>Langton, Ont.,</i>	M. D. Crooker.
Wilsie David Reed,	<i>Manchester,</i>	Faculty.
Clinton Robert Scott,	<i>Vicksburg,</i>	W. W. Scott.
Alfred Louis Sickler,	<i>Detroit,</i>	Faculty.
Charles Perce Stone,	<i>Ann Arbor,</i>	Faculty.
Jonathan Ray Taft,	<i>Cincinnati, O.,</i>	William Taft.
Lewis Carlisle Thayer,	<i>Farmington,</i>	Faculty.
Eldon Waterloo,	<i>Smith's Creek,</i>	Faculty.
Burt Winans,	<i>Ann Arbor .</i>	Faculty.

FRESHMEN.

NAME.	RESIDENCE.	PRECEPTOR.
Burt Abell,	<i>Ann Arbor,</i>	Faculty.
Samuel Arthur,	<i>East Saginaw,</i>	Faculty.
Harry Howard Avery,	<i>Howell,</i>	S. L. Avery.
Frank Irvin Ball,	<i>Fremont, O.,</i>	Faculty.
Harry Park Ball,	<i>Albion,</i>	Faculty.
Walter Joel Bell,	<i>Ann Arbor,</i>	Faculty.
Herbert Warren Bovee,	<i>Clayton,</i>	Faculty.
Charles Edward Burchfield,	<i>Ann Arbor,</i>	Faculty.
Ferdinand John Henry Bush,	<i>San Francisco, Cal.,</i>	Louis Bush.
William John Bush,	<i>Ann Arbor,</i>	Faculty.
Timothy Childs,	<i>Warrensburg, Ill.,</i>	Faculty.
Jessie Bell Cox,	<i>Auckland, New Zealand,</i>	E. & H. Cox.
Warren Archibald Diack,	<i>Detroit,</i>	Faculty.
George Dilworth,	<i>Dilworth, Mon.,</i>	Faculty.
William Haidle,	<i>Detroit,</i>	Faculty.
Harry Lawrence Hall,	<i>Ann Arbor,</i>	L. P. Hall.
Henry James Harvey,	<i>Sibley, Ia.,</i>	M. M. Trainer.
Thomas Ebenezer Howson,	<i>Teeswater, Ont.,</i>	Faculty.
Osgood Frank Ingalls,	<i>Ann Arbor,</i>	Faculty.
John Lewis Joyce,	<i>Worcester, Mass.,</i>	F. E. Cassidy.
Ben Hubbard Lee,	<i>Irving,</i>	Faculty.
Frank B. Martin,	<i>Decatur, Ill.,</i>	Faculty.
John Albert Moore,	<i>Defiance, O.,</i>	S. D. Porter.
William James Mummery,	<i>Ann Arbor,</i>	Faculty.
Frank Prettyman,	<i>Ann Arbor,</i>	Faculty.
Frank K. Procter,	<i>Hillsdale,</i>	Faculty.

NAME.	RESIDENCE.	PRECEPTOR.
Richard Nelson Randles,	<i>Wardsville, Ont.,</i>	Faculty.
Edward Douglas Slawson,	<i>Bay City,</i>	Gilbert & Light.
Joseph Allen Snyder,	<i>Athens,</i>	Faculty.
Edward Bartlett Spalding,	<i>Sault Ste. Marie,</i>	Faculty.
Carrie Marsden Stewart,	<i>Evansville, Ind.,</i>	Faculty.
George Ernest Tribby,	<i>Mentor, O.,</i>	J. W. Cloes.
Anthony Van Kammen,	<i>Grand Rapids,</i>	Faculty.
Ralph Augustus Waldron,	<i>Brimfield, O.,</i>	J. C. Waldron.
Austin Smith Watrous,	<i>Flint,</i>	Miller & Hutchins.
Edgar Williams,	<i>London, Eng.,</i>	Faculty.

ADDENDA.

The following names should be inserted in the catalogue of students in the Department of Literature, Science, and the Arts.

CANDIDATES FOR A DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Alfred Buck Davis,	B. L.		<i>Gladstone.</i>
Guy Dale Duncan,	Ph. B.	21 3-5	<i>Longmont, Col.</i>
Harold Merrell Joss,	B. S.		<i>Centreville.</i>
John Van Nortwick,	B. S.		<i>Batavia, Ill.</i>

NOT CANDIDATES FOR A DEGREE.

NAME.	RESIDENCE.
James Melville Coleman, A. B., Geneva College.	<i>Ogdensburg, N. Y.</i>
Elizabeth Cooke,	<i>Cedar Rapids, Ia.</i>

ERRATA.

Page 109, line 17, for "at the time," read *at the same time.*

Page 114, line 11, for "apartmnets," read *apartments.*

Page 184, lines 25, 26, for "*St. Matthews, O.,*" read *St. Matthews, Ky.*

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SUMMARY OF STUDENTS.

Department of Literature, Science, and the Arts.

RESIDENT GRADUATES	45
*CANDIDATES FOR AN ADVANCED DEGREE, ENROLLED IN OTHER DEPARTMENTS	6
GRADUATES STUDYING <i>in absentia</i>	33
CANDIDATES FOR A BACHELOR'S DEGREE	775
STUDENTS NOT CANDIDATES FOR A DEGREE	148 — 1007

Department of Medicine and Surgery.

RESIDENT GRADUATES	3
THIRD YEAR STUDENTS	94
SECOND YEAR STUDENTS	121
FIRST YEAR STUDENTS	154 — 372

Department of Law.

RESIDENT GRADUATES	5
SENIORS	219
JUNIORS	277
SPECIAL STUDENTS	21
*STUDENTS ENROLLED IN DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS	11 — 533

School of Pharmacy.

RESIDENT GRADUATES	3
SECOND YEAR STUDENTS	33
FIRST YEAR STUDENTS	47 — 83
Carried up	1995

* Included in *Summary by States* on page 242 only in the Department in which they are enrolled.

SUMMARY OF STUDENTS.

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Brought up ----- 1995

Homœopathic Medical College.

RESIDENT GRADUATE-----	1
THIRD YEAR STUDENTS -----	23
SECOND YEAR STUDENTS-----	23
FIRST YEAR STUDENTS-----	25 — 72

College of Dental Surgery.

SENIORS -----	41
JUNIORS-----	26
FRESHMEN-----	36 —103

	2170
Deduct for names counted twice -----	17

Total -----	2153
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SUMMARY BY STATES

AND BY DEPARTMENTS.

STATE OR COUNTRY.	Department of Literature, Science, and the Arts.	Department of Medicine and Surgery.	Department of Law.	School of Pharmacy.	Homoeopathic Medical College.	College of Dental Surgery.	Total.
Michigan.....	566	173	145	38	39	58	1019
Illinois.....	142	14	61	4	—	3	223
Ohio.....	71	31	44	14	6	9	175
Indiana.....	36	21	34	7	2	3	103
New York.....	32	28	9	6	5	4	84
Iowa.....	27	11	20	1	3	3	65
Pennsylvania.....	10	16	82	—	4	—	62
Missouri.....	5	5	22	3	—	—	35
California.....	8	2	16	—	3	4	33
Minnesota.....	13	4	10	—	1	—	28
Colorado.....	5	2	16	—	—	—	23
Wisconsin.....	6	6	7	—	—	4	23
Kansas.....	5	5	11	—	—	—	21
Nebraska.....	7	—	12	—	—	—	19
Utah.....	8	1	7	1	1	—	18
Kentucky.....	7	3	4	1	—	—	15
Washington.....	4	—	5	1	—	—	10
Massachusetts.....	3	3	1	—	—	2	9
Montana.....	4	—	3	—	—	1	8
New Jersey.....	5	2	1	—	—	—	8
New Hampshire.....	4	1	1	—	—	—	7
Arkansas.....	1	2	2	1	—	—	6
Connecticut.....	1	3	—	1	1	—	6
Oregon.....	—	3	3	—	—	—	6
Vermont.....	1	3	2	—	—	—	6
District of Columbia.....	4	—	—	1	—	—	5
North Dakota.....	—	—	4	1	—	—	5
Tennessee.....	4	—	1	—	—	—	5
South Dakota.....	2	—	2	—	—	—	4
Texas.....	1	—	2	—	—	1	4
West Virginia.....	—	1	3	—	—	—	4
Delaware.....	1	—	2	—	—	—	3
Florida.....	1	—	1	—	—	1	3
Georgia.....	—	—	3	—	—	—	3
Idaho.....	1	—	2	—	—	—	3
Maine.....	3	—	—	—	—	—	3
Arizona.....	1	—	1	—	—	—	2
Maryland.....	1	—	1	—	—	—	2
North Carolina.....	1	1	—	—	—	—	2
South Carolina.....	—	1	1	—	—	—	2
Mississippi.....	—	—	1	—	—	—	1
Nevada.....	—	1	—	—	—	—	1
Rhode Island.....	1	—	—	—	—	—	1
Ontario.....	1	22	10	1	7	4	45
Japan.....	2	3	16	—	—	—	21
England.....	1	—	—	—	—	4	5
Hawaiian Islands.....	1	—	—	1	—	—	2
New Brunswick.....	—	1	1	—	—	—	2
New Zealand.....	—	—	—	—	—	2	2
Porto Rico.....	—	1	—	—	—	1	2
Province of Quebec.....	—	—	2	—	—	—	2
Germany.....	1	—	—	—	—	—	1
Hungary.....	—	1	—	—	—	—	1
Italy.....	1	—	—	—	—	—	1
Manitoba.....	—	—	1	—	—	—	1
Mexico.....	—	—	—	1	—	—	1
Nova Scotia.....	1	—	—	—	—	—	1
Russia.....	1	—	—	—	—	—	1
Total.....	1001	372	522	83	72	103	2153

Officers of University Alumni Associations

FOR THE YEAR 1889-90.



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UNIVERSITY OF MICHIGAN

FOR

1890-91.

ANN ARBOR, MICH.:
PUBLISHED BY THE UNIVERSITY.

1891.

CALENDAR

OF THE

UNIVERSITY OF MICHIGAN

FOR

1890-91.

ANN ARBOR, MICH.:
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1891.

By mail

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Announcements for 1891-92.

1891.

- January 6. University Exercises resumed after Holiday Vacation.
- February 13. (Evening.) FIRST SEMESTER CLOSES.
- February 16. SECOND SEMESTER BEGINS.
- April 10. (Evening.) Recess begins, ending April 21 (evening).
- June 12, 13. *Examination for Admission to the School of Pharmacy.*
- June 20, 22. *Examination for Admission to the Department of Literature, Science, and the Arts.*
- June 21. *Baccalaureate Address.*
- June 23. *Class Day.*
- June 24. *Alumni Day.*
- June 25. COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY. The Commencement Oration is to be delivered by DANIEL C. GILMAN, LL. D., President of Johns Hopkins University.
- Summer Vacation from June 26 to September 30.
- September 24-29. *Examination for Admission to the Department of Literature, Science, and the Arts.*
- September 29-30. *Examination for Admission to the Department of Law, and to the School of Pharmacy.*
- September 30. *Examination for Admission to the Department of Medicine and Surgery, to the Homœopathic Medical College, and to the College of Dental Surgery.*
- October 1. FIRST SEMESTER BEGINS IN ALL DEPARTMENTS OF THE UNIVERSITY.
- November — Thanksgiving Recess of three days, beginning Tuesday evening, in all Departments of the University.
- December 18. (Evening.) Holiday Vacation begins in all Departments.

1892.

- January 5. Exercises resumed.
- February 19. (Evening.) FIRST SEMESTER CLOSES.
- February 22. SECOND SEMESTER BEGINS.
- April 15. (Evening.) Recess begins, ending April 25 (evening).
- June 30. COMMENCEMENT IN ALL DEPARTMENTS OF THE UNIVERSITY.

1891.

JANUARY.							APRIL.							JULY.							OCTOBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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1892.

JANUARY.							APRIL.							JULY.							OCTOBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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31	31	31

FEBRUARY.							MAY.							AUGUST.							NOVEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
..	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
7	8	9	10	11	12	13	1	2	3	4	5	6	7	7	8	9	10	11	12	13	6	7	8	9	10	11	12
14	15	16	17	18	19	20	8	9	10	11	12	13	14	14	15	16	17	18	19	20	13	14	15	16	17	18	19
21	22	23	24	25	26	27	15	16	17	18	19	20	21	21	22	23	24	25	26	27	20	21	22	23	24	25	26
28	29	..	..	..	..	..	22	23	24	25	26	27	28	28	29	30	31	..	..	..	27	28	29	30	..	..	..
..	..	..	..	..	..	..	29	30	31	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

MARCH.							JUNE.							SEPTEMBER.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
..	1	2	3	4	5	6	..	..	1	2	3	4	5	..	..	1	2	3	4	5	3	4	5	6	7	8	9
13	14	15	16	17	18	19	12	13	14	15	16	17	18	11	12	13	14	15	16	17	11	12	13	14	15	16	17
20	21	22	23	24	25	26	19	20	21	22	23	24	25	18	19	20	21	22	23	24	18	19	20	21	22	23	24
27	28	29	30	31	..	..	26	27	28	29	30	..	..	25	26	27	28	29	30	..	25	26	27	28	29	30	31
..

Board of Regents.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

		TERM EXPIRES.
HON. ARTHUR M. CLARK,	<i>Lexington,</i>	Dec. 31, 1891.
HON. CHARLES J. WILLETT,	<i>St. Louis,</i>	" 1891.
HON. HERMANN KIEFER,	<i>Detroit,</i>	" 1893.
HON. CHARLES R. WHITMAN,	<i>Ann Arbor,</i>	" 1893.
HON. ROGER W. BUTTERFIELD,	<i>Grand Rapids,</i>	" 1895.
HON. CHARLES HEBARD,	<i>Pequaming,</i>	" 1895.
HON. CHARLES S. DRAPER,	<i>East Saginaw,</i>	" 1897.
HON. WILLIAM J. COCKER,	<i>Adrian,</i>	" 1897.

JAMES H. WADE,

SECRETARY AND STEWARD.

HARRISON SOULE,

TREASURER.

HON. FERRIS S. FITCH,

SUPERINTENDENT OF PUBLIC INSTRUCTION.

(Office at Lansing.)

BOARD OF VISITORS.

SULLIVAN M. CUTCHEON,
ASHLEY POND,
BENTON HANCHETT,

Detroit.
Detroit.
Saginaw.

MEMBERS OF THE FACULTIES

AND OTHER OFFICERS.

PERMANENT APPOINTMENTS AND APPOINTMENTS FOR TERMS LONGER THAN ONE YEAR.*

- JAMES B. ANGELL, LL. D., PRESIDENT. South University Avenue.
- CORYDON L. FORD, M. D., LL. D., *Professor of Anatomy and Physiology, and Dean of the Department of Medicine and Surgery.* 64 Washtenaw Avenue.
- ALBERT B. PRESCOTT, PH. D., M. D., *Director of the Chemical Laboratory, Professor of Organic Chemistry, and Dean of the School of Pharmacy.* 50 South Ingalls Street.
- REV. MARTIN L. D'OUGE, LL. D., *Professor of the Greek Language and Literature, and Dean of the Department of Literature, Science, and the Arts.* 77 Washtenaw Avenue.
- CHARLES E. GREENE, A. M., C. E., *Professor of Civil Engineering.* 37 William Street.
- JONATHAN TAFT, M. D., D. D. S., *Professor of the Principles and Practice of Operative Dentistry, and Dean of the College of Dental Surgery.* 20 South University Avenue.
- WILLIAM H. PETTEE, A. M., *Professor of Mineralogy, Economic Geology, and Mining Engineering.* 52 Thompson Street.
- JOHN A. WATLING, D. D. S., *Professor of Clinical and Mechanical Dentistry.* Huron Street, Ypsilanti.
- MARK W. HARRINGTON, A. M., *Professor of Astronomy, and Director of the Observatory.* Observatory.
- JOSEPH B. STEERE, PH. D., *Professor of Zoology.* South Ypsilanti Road.
- EDWARD L. WALTER, PH. D., *Professor of Romance Languages and Literatures.* 93 South State Street.
- ALEXANDER WINCHELL, LL. D., *Professor of Geology and Palaeontology.* 11 North University Avenue.

*The names of Professors (including Librarian), Assistant Professors (including Superintendent of Shops), and other officers are placed in their appropriate divisions, according to length of continuous service with present rank.

- ISAAC N. DEMMON, A. M., *Professor of English and Rhetoric.*
76 Washtenaw Avenue.
- WILLIAM H. DORRANCE, D. D. S., *Professor of Prosthetic
Dentistry and Dental Metallurgy.* 42 South Ingalls Street.
- ALBERT H. PATTENGILL, A. M., *Professor of Greek.*
7 Cornwell Place.
- MORTIMER E. COOLEY, M. E., *Professor of Mechanical En-
gineering.* 32 Packard Street.
- WILLIAM J. HERDMAN, PH. B., M. D., *Professor of Nervo-
us Diseases and Electrotherapeutics.* 48 East Huron Street.
- WOOSTER W. BEMAN, A. M., *Professor of Mathematics.*
19 South Fifth Avenue.
- VICTOR C. VAUGHAN, PH. D., M. D., *Professor of Hygiene
and Physiological Chemistry, and Director of the Hygi-
enic Laboratory.* 15 South State Street.
- HENRY L. OBETZ, M. D., *Professor of Surgery and Clinical
Surgery, and Dean of the Homœopathic Medical College.*
139 First Street, Detroit.
- *THOMAS M. COOLEY, LL. D., *Professor of American His-
tory and Constitutional Law.* 76 South State Street.
- CHARLES S. DENISON, M. S., C. E., *Professor of Descriptive
Geometry, Stereotomy, and Drawing.* 23 South Division Street.
- JAMES C. WOOD, M. D., *Professor of Obstetrics and Diseases
of Women and Children in the Homœopathic Medical
College.* 66 South Fourth Avenue.
- DANIEL A. McLACHLAN, M. D., *Professor of Ophthalmol-
ogy, Otology, and Pædology in the Homœopathic Medical
College, and Secretary of the Homœopathic Faculty.*
26 South Division Street.
- HENRY S. CARHART, A. M., *Professor of Physics, and Di-
rector of the Physical Laboratory.* 7 Monroe Street.
- LEVI T. GRIFFIN, A. M., *Fletcher Professor of Law.*
148 Henry Street, Detroit.
- RAYMOND C. DAVIS, A. M., *Librarian.* 61 Washtenaw Avenue.
- VOLNEY M. SPALDING, A. B., *Professor of Botany.*
50 Thompson Street.
- †HENRY C. ADAMS, PH. D., *Professor of Political Economy
and Finance.*

* Professor Cooley has leave of absence, but delivers a brief course of lectures on the law of inter-state commerce to advanced students in the Department of Law.

† Absent during first semester.

- CALVIN THOMAS, A. M., *Professor of Germanic Languages and Literatures.* Corner of Tappan and Hill Streets.
- WILLIAM P. WELLS, A. M., *Kent Professor of Law.* 104 Edmund Place, Detroit.
- HENEAGE GIBBES, M. D., *Professor of Pathology.* 16 Forest Avenue.
- BURKE A. HINSDALE, PH. D., *Professor of the Science and the Art of Teaching.* 13 Church Street.
- RICHARD HUDSON, A. M., *Professor of History.* 40 South Ingalls Street.
- BRADLEY M. THOMPSON, M. S., LL. B., *Jay Professor of Law.* 25 East University Avenue.
- ALBERT A. STANLEY, A. M., *Professor of Music.* 19 South Ingalls Street.
- JOHN DEWEY, PH. D., *Professor of Philosophy.* 15 Forest Avenue.
- FRANCIS W. KELSEY, PH. D., *Professor of the Latin Language and Literature.* 55 East University Avenue.
- JEROME C. KNOWLTON, A. B., *Marshall Professor of Law, and Acting Dean of the Department of Law.* 77 East Huron Street.
- CHARLES GATCHELL, M. D., *Professor of the Theory and Practice of Medicine in the Homœopathic Medical College.* 23 South Division Street.
- CHARLES S. MACK, A. B., M. D., *Professor of Materia Medica and Therapeutics in the Homœopathic Medical College.* 14 South State Street.
- CHARLES B. NANCREDE, M. D., *Professor of Surgery and Clinical Surgery in the Department of Medicine and Surgery.* 4 Cornwell Place.
- FLEMMING CARROW, M. D., *Professor of Ophthalmic and Aural Surgery and Clinical Ophthalmology in the Department of Medicine and Surgery.* 56 South University Avenue.
- OTIS C. JOHNSON, PH. C., A. M., *Professor of Applied Chemistry.* 52 South Thayer Street.
- PAUL C. FREER, PH. D., M. D., *Professor of General Chemistry.* 21 Monroe Street.
- WILLIAM H. HOWELL, PH. D., M. D., *Professor of Histology and Physiology.* 57 East University Avenue.
- JOSEPH B. DAVIS, C. E., *Assistant Professor of Civil Engineering.* 51 South Ingalls Street.

- NELVILLE S. HOFF, D. D. S., *Assistant Professor of Practical Dentistry.* 79 South State Street.
- ANDREW C. McLAUGHLIN, A. B., *Assistant Professor of History.* 41 South Twelfth Street.
- P. R. DEPONT, A. B., B. S., *Assistant Professor of French, and Registrar of the Department of Literature, Science, and the Arts.* 23 East Jefferson Street.
- CLARENCE G. TAYLOR, B. S., *Superintendent of Shops in Engineering Laboratory.* 20 South University Avenue.
- JACOB E. REIGHARD, PH. B., *Assistant Professor of Zoology.* 12½ North Thayer Street.
- THOMAS C. TRUEBLOOD, A. M., *Assistant Professor of Elo- cution.* 88 Hill Street.
- GEORGE HEMPL, PH. D., *Assistant Professor of English.* 67 Washtenaw Avenue.
- EDWARD D. CAMPBELL, B. S., *Assistant Professor of Metal- lurgy.* 60 Washtenaw Avenue.
- *JOSEPH H. DRAKE, A. B., *Assistant Professor of Latin.*
- FRED N. SCOTT, PH. D., *Assistant Professor of Rhetoric.* 1 College Street.
- FRANK N. COLE, PH. D., *Assistant Professor of Mathematics.* 24 Forest Avenue.
- JOHN C. ROLFE, PH. D., *Assistant Professor of Latin.* 47 South Division Street.
- ALVISO B. STEVENS, PH. C., *Lecturer on Pharmacy.* 15 Church Street.
- CHARLES K. MCGEE, A. B., *Instructor in General Chem- istry.* 4 Forest Avenue.
- GOTTHELF C. HUBER, M. D., *Instructor in Histology.* 23 Monroe Street.
- JAMES N. MARTIN, PH. M., M. D., *Lecturer on Oral Pathol- ogy and Surgery in the College of Dental Surgery.* 16 North State Street.
- WILLIAM A. CAMPBELL, M. D., *Assistant Demonstrator of Anatomy, and Secretary of the Faculty of the Depart- ment of Medicine and Surgery.* 21 South State Street.
- JOSEPH H. VANCE, LL. B., *Assistant Librarian, in charge of the Law Library.* Ann Arbor Town.

* Absent on leave.

JOSEPH CLARK, *Superintendent of Hospitals.* University Hospital.

NON-RESIDENT LECTURERS ON SPECIAL TOPICS FOR 1890-91.

HENRY B. BROWN, LL. D., *Lecturer on Admiralty and Patent Law.* 712 Jefferson Avenue, Detroit.

JOHN W. LANGLEY, S. B., M. D., *Lecturer on the Metallurgy of Steel.* Pittsburgh, Pa.

MARSHALL D. EWELL, LL. D., *Lecturer on Medical Jurisprudence.* Chicago, Ill.

SAMUEL MAXWELL, *Lecturer on Code Pleading and Practice.* Fremont, Neb.

JAMES L. HIGH, LL. D., *Lecturer on Equity Jurisprudence.* Chicago, Ill.

CARROLL D. WRIGHT, A. M., *Lecturer on Political Economy.* Washington, D. C.

EDWIN R. A. SELIGMAN, LL. B., PH. D., *Lecturer on Political Economy.* New York, N. Y.

JOHN B. CLAYBERG, LL. B., *Lecturer on Mining Law.* Helena, Mon.

OSCAR R. LONG, M. D., *Lecturer on Mental Diseases in the Homœopathic Medical College.* Ionia.

OTHER APPOINTMENTS FOR 1890-91.

JAMES N. MARTIN, PH. M., M. D., *Acting Professor of Obstetrics and Diseases of Women and Children in the Department of Medicine and Surgery.* 16 North State Street.

FRED M. TAYLOR, PH. D., *Lecturer on Political Economy (first semester).* 13 South State Street.

WILLIAM H. HOWELL, PH. D., M. D., *Lecturer on Microscopy in its Medico-legal Relations in the Department of Law.* 57 East University Avenue.

WILLIAM F. BREAKEY, M. D., *Lecturer on Dermatology.* 54 East Huron Street.

RICHARD HUDSON, A. M., *Lecturer on Comparative Constitutional Law in the Department of Law.* 40 South Ingalls Street.

JOHN J. ABEL, PH. D., M. D., *Lecturer on Materia Medica and Therapeutics in the Department of Medicine and Surgery.* 3 Volland Street.

WALTER S. CHRISTOPHER, M. D., *Lecturer on the Theory and Practice of Medicine and Clinical Medicine in the Department of Medicine and Surgery.* 26 East Jefferson Street.

- HENRY WADE ROGERS, LL. D., *Lecturer on Domestic Relations and Criminal Law (first semester)*. 82 South State Street.
- MELVILLE M. BIGELOW, A. M., *Lecturer on Torts and Wills in the Department of Law (second semester)*.
- ALEXANDER ZIWET, C. E., *Acting Assistant Professor of Mathematics*. 6 North Division Street.
- FRANK C. WAGNER, A. M., *Acting Assistant Professor of Mechanical Engineering*. 2 Packard Street.
- FREDERICK G. NOVY, Sc. D., *Instructor in Hygiene*. 31 East Liberty Street.
- WILLIAM W. CAMPBELL, B. S., *Instructor in Astronomy*. 28 Packard Street.
- CARL W. BELSER, Ph. D., *Instructor in German and Hebrew*. 35 Monroe Street.
- WILLIAM A. CAMPBELL, M. D., *Instructor in Anatomy*. 21 South State Street.
- JAMES H. TUFTS, A. M., B. D., *Instructor in Philosophy*. 23 Monroe Street.
- GEORGE W. PATTERSON, A. B., S. B., *Instructor in Physics*. 14 South University Avenue.
- WILLIAM J. HUSSEY, B. S., *Instructor in Mathematics*. 28 Packard Street.
- JOSEPH L. MARKLEY, Ph. D., *Instructor in Mathematics*. 23 South Fifth Avenue.
- WILLARD K. CLEMENT, A. M., *Instructor in Latin*. 48 South Twelfth Street.
- EDWIN W. FAY, Ph. D., *Instructor in Ancient Languages*. 37 South Ingalls Street.
- JOSEPH V. DENNEY, A. B., *Instructor in English*. 6 North Division Street.
- JOHN H. T. MCPHERSON, Ph. D., *Instructor in History*. 40 South Ingalls Street.
- C. CARROLL MARDEN, A. B., *Instructor in French*. 14 Monroe Street.
- MORITZ LEVI, A. B., *Instructor in French*. 86 East Huron Street.
- GEORGE A. HENCH, Ph. D., *Instructor in German*. 43 South Ingalls Street.
- MAX WINKLER, A. B., *Instructor in German*. 85 South State Street.

- FREDERICK C. NEWCOMBE, B. S., *Instructor in Botany.*
51 East Liberty Street.
- FREDERICK C. HICKS, PH. D., *Instructor in Political Economy (second semester).*
- FRED MORLEY, B. S., *Instructor in Descriptive Geometry and Drawing.* 46 East Catherine Street.
- GLEN P. SWIGGETT, A. B., *Instructor in German and French.* 68 South State Street.
- ELMER A. LYMAN, A. B., *Instructor in Mathematics.*
30 East Liberty Street.
- WILLIAM F. EDWARDS, B. S., *Accountant and Dispensing Clerk in the Chemical Laboratory.* 62 North Street.
- JULIUS O. SCHLOTTERBECK, PH. C., *Assistant in Pharmacognosy.* 13 Forest Avenue.
- JOHN D. RIKER, B. S., M. D., *Assistant in Physiological Chemistry.* 60 East Washington Street.
- JAMES G. LYNDS, M. D., *Assistant to the Acting Professor of Obstetrics and Diseases of Women and Children in the Department of Medicine and Surgery.* 30 South State Street.
- BERT B. ROWE, M. D., *Resident Physician and Surgeon in the University Hospital.* University Hospital.
- ALICE HUNT, *Assistant in Drawing.* 27 North University Avenue.
- FRED P. JORDAN, A. B., *Assistant in General Library in charge of Catalogue.* 48 South Twelfth Street.
- LOUIS P. HALL, D. D. S., *Assistant to the Professor of Clinical and Mechanical Dentistry.* 109 Hill Street.
- CYRENUS G. DARLING, M. D., *Assistant to the Professor of Surgery and Clinical Surgery in the Department of Medicine and Surgery.* 38 East University Avenue.
- FRANK A. WAPLES, B. S., *Assistant in Physiology.*
30 South Thayer Street.
- FRANCIS W. BREWER, M. D., *Assistant to the Professor of Hygiene and Physiological Chemistry.* 39 South Twelfth Street.
- ANDERSON H. HOPKINS, *Assistant in General Library.*
9 South State Street.
- MOSES GOMBERG, B. S., *Assistant in Organic Chemistry.*
44 South University Avenue.

- CHRISTIAN G. JENTER, PH. C., *Assistant in Quantitative Analysis.* 59 West Liberty Street.
- HARVEY E. HOFFMAN, M. D., *Resident Physician and Surgeon in the Homœopathic Hospital.* Homœopathic Hospital.
- ERNEST A. CLARK, M. D., *Assistant to the Professor of Surgery, and to the Professor of Ophthalmology, Otology, and Pædology in the Homœopathic Medical College.* 25 North State Street.
- ANDREW B. NELLES, M. D., *Assistant to the Professor of the Theory and Practice of Medicine, and to the Professor of Materia Medica and Therapeutics, in the Homœopathic Medical College.* 25 North State Street.
- BERNHARD C. HESSE, PH. C., *Assistant in Qualitative Analysis.* 13 Forest Avenue.
- ELIAS F. JOHNSON, B. S., LL. B., *Assistant in the Department of Law.* 14 Maynard Street.
- RODOLPHUS W. JOSLYN, LL. B., *Assistant in the Department of Law.* 30 William Street.
- SAMUEL H. GOODALL, LL. B., *Assistant in the Department of Law.* 84 South Main Street.
- MARY DENISON, M. D., *Assistant to the Professor of Obstetrics and Diseases of Women and Children in the Homœopathic Medical College.* East Huron Street.
- OSBOURNE F. CHADBOURNE, M. D., *Assistant to the Lecturer on the Theory and Practice of Medicine and Clinical Medicine in the Department of Medicine and Surgery.* 27 North Division Street.
- ARTHUR S. ROGERS, M. D., *Assistant to the Professor of Pathology.* 10½ South State Street.
- WILLIAM L. MOORE, M. D., *Assistant to the Professor of Nervous Diseases and Electrotherapeutics.* 79 West Huron Street.
- ELMER E. HAGLER, M. D., *Assistant to the Professor of Ophthalmic and Aural Surgery and Clinical Ophthalmology in the Department of Medicine and Surgery.* 6 Hamilton Block.
- RUFUS H. BENNETT, LL. B., *Assistant in the Department of Law.* 22 Volland Street.
- GUY B. THOMPSON, LL. B., *Assistant in the Department of Law.* 25 East University Avenue.

UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

The University of Michigan is a part of the public educational system of the State. The governing body of the institution is a Board of Regents, elected by popular vote for terms of eight years, as provided in the constitution of the State. In accordance with the law of the State, the University aims to complete and crown the work that is begun in the public schools, by furnishing ample facilities for liberal education in literature, science, and the arts, and for thorough professional study of medicine, pharmacy, law, and dentistry. Through the aid that has been received from the United States and from the State it is enabled to offer its privileges, without charge for tuition, to all persons, of either sex, who are qualified for admission. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the institution to all students, wherever their homes. It is in this broad, generous, and hospitable spirit, that the University has been founded, and that it endeavors to do its work.

ORGANIZATION OF THE UNIVERSITY.

The University comprises the Department of Literature, Science, and the Arts, the Department of Medicine and Surgery, the Department of Law, the School of Pharmacy, the Homœopathic Medical College, and the College of Dental Surgery. Each department has its special Faculty. The University Senate is composed of all the Faculties, and considers questions of common interest and importance to them all.

In the Department of Literature, Science, and the Arts, different lines of study lead to the attainment of the degrees of Bachelor

of Arts, Bachelor of Philosophy, Bachelor of Science, Bachelor of Letters, the corresponding Masters' degrees, the degrees of Doctor of Philosophy, Doctor of Science, and Doctor of Letters, and the degrees of Civil Engineer, Mechanical Engineer, Mining Engineer, and Electrical Engineer. When the same degree is given for different lines of study, this fact is indicated in the diploma. Students that do not wish to become candidates for a degree, may, if they are prepared to enter this department of the University, pursue selected studies for such a time, not less than one semester, as they may choose.

In the professional schools the instruction is given largely by lectures. The several degrees are given as follows: In the Department of Medicine and Surgery, the degree of Doctor of Medicine; in the Department of Law, the degrees of Bachelor of Laws and Master of Laws; in the School of Pharmacy, the degrees of Pharmaceutical Chemist and Master of Pharmacy; in the Homœopathic Medical College, the degree of Doctor of Medicine; in the College of Dental Surgery, the degree of Doctor of Dental Surgery.

Students in any department of the University may enter the classes in any other, upon obtaining permission from the Faculties of the respective departments.

THE LIBRARIES.

The libraries of the University are the General Library, the Medical Library, the Law Library, and the Library of the College of Dental Surgery. They contained in the aggregate, September 30, 1890, 74,599 volumes, 14,907 unbound pamphlets, and 571 maps and charts.

THE GENERAL LIBRARY, including the special collections known as the Parsons Library, the McMillan Shakespeare Library, the Hagerman Collection of History and Political Science, the German-American Goethe Library, and the Dorsch Library, contains 59,735 volumes, 14,708 unbound pamphlets, and 571 maps and charts.

The Parsons Library was collected by Professor C. H. Rau, of Heidelberg University. At his death it was offered for sale, and was bought and presented to the University in 1871 by Hon. Philo Parsons, of Detroit. It contains, with recent additions made by Mr. Parsons, 4,325 volumes and

5,000 pamphlets. It is especially rich in European works on the science of government, statistics, and political economy.

The nucleus of the McMillan Shakespeare Library was the valuable Shakespearian collection of 750 volumes made by Col. E. H. Thompson, of Flint. This was bought and presented to the University in 1882, by Hon. James McMillan, of Detroit, who at the same time provided the means for making additions to it. The collection now consists of 3,350 volumes of text, criticism, and Shakespeariana.

The Hagerman Collection of History and Political Science was purchased with means provided in 1882 by Mr. James J. Hagerman, a graduate of this University, class of 1861. It is practically a collection of great serial publications, of which there may be named, for the purpose of illustration, the Calendar of State Papers of Great Britain, Petitot's *Collection Complète des Mémoires relatifs à l' Histoire de France*, and the *Preussische Jahrbuecher*. It contains at present 2,600 volumes.

The German-American Goethe Library has been founded and will be augmented from funds contributed for the purpose by a large number of persons in Michigan and other States. The donors are chiefly, though not exclusively, Germans. The number of volumes secured thus far is 800.

The Dorsch Library was the private collection of Dr. Edward Dorsch, of Monroe. In accordance with a wish expressed by him a few months before his death, it was, after that event, presented by Mrs. Dorsch to the University. It contains 1,676 volumes and 148 pamphlets. Among the volumes are many of great interest and value, and some that are rare.

The catalogue of the library is the usual card catalogue of authors and subjects.

One hundred and eighty-four American and European periodicals are taken.

Members of the Faculties and other officers of the University may draw books from the library, subject to certain restrictions. To all other persons it is a reference library. The reading room for general use will seat 210 readers. Separate rooms for advanced students are provided where work is pursued with the necessary books at hand.

The MEDICAL LIBRARY, containing 4,146 volumes and 996 unbound pamphlets, is shelved with the General Library, and is consulted under the same regulations. Fifty-six medical journals are regularly received.

The LAW LIBRARY occupies the large room on the first floor of the law building. In 1885 it was doubled in extent by the generosity of Mr. Christian H. Buhl, of Detroit, who presented to the University a large collection of law books. This library now contains 10,208 volumes.

The LIBRARY OF THE COLLEGE OF DENTAL SURGERY is shelved in a room in the dental building. It contains several sets of valuable periodicals and many of the most important treatises on dentistry. The whole number of volumes is 500. Thirteen dental periodicals are taken.

The students' literary and engineering societies in the Department of Literature, Science, and the Arts, have also good libraries.

The Students' Christian Association connected with the University has a well-selected library of moral and religious works.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is known as the Detroit Observatory, having been founded through the liberality of citizens of Detroit. Valuable additions and improvements have been made by means of further contributions from the same source, and from the city of Ann Arbor, and also by appropriations made by the Board of Regents. The building consists of a main part, with a movable dome, and two wings. The east wing contains the large meridian circle presented by Mr. Henry N. Walker, of Detroit. It was constructed by Pistor & Martins, of Berlin, and is one of the largest and best of the kind. The same wing contains a sidereal clock, made by Tiede, of Berlin, and the collimators for the meridian circle. The west wing contains the observatory library and the smaller instruments, and connects with the residence of the Director. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late Henry Fitz, of New York.

A small observatory used in the work of instruction has been erected on the observatory grounds, near the main building. It contains an equatorial telescope of six inches aperture, and a transit instrument of three inches aperture, with zenith telescope attachment. A separate building contains computing rooms and rooms for observers, and a work-shop where necessary repairs and attachments for the instruments can be made.

A set of self-registering meteorological instruments, consisting of Hough's barograph and thermograph, and an anemograph, is a part of the outfit.

THE MUSEUMS.

The University Museums contain collections illustrative of natural history, the industrial arts, chemistry, materia medica, anatomy, archæology, ethnology, the fine arts, and history. These collections are constantly increasing, and are in charge of curators as follows: the museum of fine arts and history, Professor D'Ooge; the collections in zoölogy, archæology, and ethnology, Professor Steere; the mineralogical collection, Professor Pettee; the geological collection, Professor Winchell; the botanical collection, Professor Spalding; the museum of applied chemistry, Professor Prescott; the museum of the department of medicine and surgery, Dr. W. A. Campbell; the museum of the homœopathic medical college, Professor Obetz; the dental museum, Professor Dorrance.

The collections are arranged in such a way as to render them accessible both to students and to visitors. The University affords a secure depository for objects of value and curiosity, and it is therefore hoped that frequent gifts will be made to its several museums.

The museum building contains the collections in natural history, the industrial arts, archæology, and ethnology, and the Chinese exhibit. The collections of works of art, including historical medals and coins, are in the art gallery.

The following descriptions indicate the character of some of the collections belonging to the University; the description of the anatomical collection will be found in the chapter on the Department of Medicine and Surgery.

NATURAL HISTORY.

I. THE MINERALOGICAL COLLECTION comprises about 6,000 specimens. It embraces about 2,500 specimens (principally European) purchased of the late BARON LEDERER, and known as the LEDERER COLLECTION; and, besides others, a rich collection of the MINERAL SPECIES OF MICHIGAN, including all varieties of copper ore and associated minerals from the different localities of the Lake Superior mining district.

II. The GEOLOGICAL COLLECTION consists of:

1. The large and complete series of lithological and palæontological specimens brought together by the State geological surveys, of which over a hundred fossil species have already become the types of original descriptions.

2. The **WHITE COLLECTION**, consisting of 1,018 distinct entries, 6,000 specimens.

3. The **ROMINGER COLLECTION**, embracing about 2,500 entries, 6,000 specimens, mostly from the mesozoic formations of central Europe. This collection embraces about 500 specimens of mesozoic ammonites.

4. **SMITHSONIAN DEPOSITS**, consisting, for the present, of a collection of specimens of foreign and domestic building stones, and twenty-three specimens of fossils from the Upper Missouri.

5. **MISCELLANEOUS DONATIONS, COLLECTIONS, AND PURCHASES**, including a series illustrative of the metalliferous regions of the Upper Peninsula, collected by Professor Winchell, an interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, presented by the late General Custer, U. S. A., and a series of six to eight hundred rock species and varieties from the Drift of Ann Arbor, collected, dressed to standard size and form, and presented by Miss Eliza J. Patterson.

6. The **ROMINGER DEPOSIT**, which has more than doubled the value of the geological illustrations available for study and investigation. It embraces (1) the types of all Dr. Rominger's original descriptions of palæozoic corals as contained in the Geological Report of Michigan, volume iii—not alone the specimens figured, but numerous specimens of each species, which are not duplicates, but illustrations of different characters and varieties; (2) an enormous collection of *Stromatoporoids*—probably the largest and finest in the world; (3) a similar collection of *Bryozoa*; (4) palæozoic fossils belonging to all the other classes; (5) European fossils of all classes and ages in large number—the sponges forming, with the American species, a collection of extraordinary interest. All these specimens exist in a state of beautiful and very unusual perfection. It is impossible at present to form numerical estimates on the magnitude of the collection; but a special statement will be made out as early as practicable.

The entire geological cabinet is estimated to contain, aside from the Rominger deposit, about 14,000 distinct entries, 41,000 specimens.

III. The **ZOOLOGICAL COLLECTIONS** are very large, comprising about 110,000 specimens under about 23,250 entries. There is a full series illustrative of the fauna of Michigan and other northern and western States. The animals of the Pacific coast are well represented in the collection made by Lieutenant Trowbridge, and large additions from foreign countries have been made through the medium of the Smithsonian Institution. The series of valuable specimens collected in the Philippine Islands, by Professor Steere, in the years 1887 and 1888, now forms a part of the collection.

The **BEAL-STEERE ZOOLOGICAL COLLECTION**, made by Professor Steere in the years 1870 to 1876, comprises about 25,000 insects, 1,500 shells,

3,000 birds, and numerous representatives of other groups; total, about 10,000 entries, 60,000 specimens.

IV. The BOTANICAL COLLECTION contains, in addition to Michigan plants collected by the public surveys, several valuable herbaria and sets of plants that have been presented to the University from time to time. Among these, some of the most important are the HOUGHTON HERBARIUM, the SAGER HERBARIUM, the AMES HERBARIUM, the HARRINGTON COLLECTION, the BEAL-STEERE BOTANICAL COLLECTION, the ADAMS-JEWETT COLLECTION, and the GARRIGUES COLLECTION, all of which have been described in Calendars of previous years.

Among the more recent acquisitions are a set of native woods of the United States, collected and presented to the University by Professor C. S. Sargent, Director of the Arnold Arboretum of Harvard University; a set of 1,700 species of North American fungi, presented by Mr. Joseph B. Whittier, of East Saginaw; and a set of specimens illustrating the flora of the Lake Superior region, presented by Mr. Frank A. Wood. Sections of representative specimens of the most important coniferous trees of the eastern United States have lately been presented by Dr. Charles Mohr, of Mobile, Alabama; Hon. John E. Hobbs, of North Berwick, Maine; Mr. N. B. Pierce, of Ludington, and Mr. George A. Loud, of Oscoda.

The whole botanical cabinet contains about 70,000 specimens, representing 10,000 species under 20,000 entries.

The collections in natural history are estimated to contain about 255,000 specimens, under 60,000 entries.

INDUSTRIAL COLLECTIONS.

The nucleus of an industrial museum has long existed in the botanical and zoölogical cabinets, the cabinet of economic geology, the museum of applied chemistry, a collection of the seeds of cereals and other field and garden crops, and an interesting collection of textile fibres and various substitutes for cotton. The University is desirous of enlarging these collections.

CHINESE EXHIBIT.

In 1885 the Chinese Government presented to the University the exhibit which it sent to the New Orleans Exposition. The whole collection, numbering several thousand specimens, is now on exhibition in a room set apart for its reception in the museum building. It illustrates with special fullness the varieties of Chinese cotton, the Chinese processes of manufacturing cotton, and the finished products of cotton and of silk. There are many articles showing the skill of the Chinese

in working in wood, in ivory, and in porcelain, in embroidery, and in painting on glass and on silk.

CHEMISTRY AND MATERIA MEDICA.

THE MUSEUM OF APPLIED CHEMISTRY comprises collections in *materia medica*, pharmacy, educational chemistry, and the chemical industries. This museum now occupies a convenient floor of the chemical building in the addition erected in 1890.

The collection in *materia medica*, in use both by students of medicine and by students of pharmacy, has been newly provided with cabinet cases, the gift of a friend of the University. Medicinal plants are displayed in comparison with their active constituents, each in its proportional quantity.

The collection in *pharmacy* includes both preparations and appliances. A working prescription-stand has been added by a generous contributor.

The *chemical industries* are illustrated in groups of samples and models, with references to published descriptions. Each group is intended to contain raw materials, successive chemical formations, and finished articles of several grades, thus representing a branch of chemical technology. The interests so represented are such as alkali and salt works, metallurgical works, wood distillation, coal tar and petroleum products, plastic clay and tile works, paints and mineral colors, varnishes and essential oils, glycerin and fats, and the operations of a sugar-house.

The collection in *educational chemistry* includes exhibits presenting the principles of pure chemistry as a branch of science.

A considerable share of all the collections in this museum originates in the work of students engaged in special lines of study and research.

ARCHÆOLOGY AND ETHNOLOGY.

This department contains many articles of domestic and warlike use among the North American Indians and the Islanders of the South Pacific, numerous remains of the ancient Peruvians, and many specimens of clothing, art, etc., of the Amazonian Indians, modern Peruvians, Formosans, and natives of the East Indies and Alaska. The Chinese exhibit above referred to contains a large number of articles illustrative of ethnology.

THE FINE ARTS AND HISTORY.

The works of art belonging to the University are on exhibition in the galleries provided for them in the library building. A printed cata-

logue, prepared by the late Professor Frieze, contains fuller descriptions than can here be given. The collection was begun in 1855. It contains a gallery of casts, in full size and in reduction, of the most valuable ancient statues and busts, such as the Apollo Belvedere, the Laocoon, the Sophocles, a gallery of more than two hundred reductions and models in terra-cotta and other materials; the statues of Nydia, and of Ruth Gleaning, by Randolph Rogers; copies of modern statues, busts, etc., and reliefs; a gallery of engravings and photographic views, illustrating especially the architectural and sculptural remains of ancient Italy and Greece; a small collection of engraved copies of the great masterpieces of modern painting; two series of historical medallions—the HORACE WHITE COLLECTION, and the GOVERNOR BAGLEY COLLECTION—the former illustrative of ancient, mediæval and modern European history, the latter designed to embrace all the commemorative medals struck by order of Congress or other authorities, and now containing one hundred such medals; and a large collection of coins, chiefly Greek and Roman, presented to the University by the late Dr. A. E. Richards.

The late Henry C. Lewis, of Coldwater, Michigan, by his will bequeathed to the University his valuable collection of works of art, comprising about six hundred and fifty paintings and forty pieces of statuary. The collection remains for the present at Coldwater, but will ultimately be transferred to the University gallery.

The ROGERS GALLERY comprises the entire collection of the original casts of the works of Randolph Rogers, more than a hundred in number. It was given by that distinguished sculptor to the State of Michigan for the University museum.

THE LABORATORIES.

In the several laboratories of the University opportunities are provided for practical instruction in physics, chemistry, geology, zoölogy, botany, engineering, histology, physiology, hygiene, pathology, anatomy, and dentistry. The laboratories used chiefly by students of medicine are described in the chapter on the Department of Medicine and Surgery.

PHYSICAL LABORATORY.

The physical laboratory contains about 11,000 square feet of floor space devoted exclusively to physics. The basement story has a German rock asphaltum floor throughout and is provided with heavy stone-capped piers in every work room. This entire floor is devoted to experimental work in electricity and magnetism. The engine and dynamo room, 36 by 38 feet, is supplied with a 25 H-P high-speed engine, a constant-potential dynamo of 5,000 watts capacity, two arc-light

dynamos, with full complement of lamps, and iron wire wall resistance-coils capable of absorbing 20 H-P of electrical energy. A large room adjacent contains electro-dynamometers, ammeters and voltmeters for tests of dynamos and motors. The photometric room, with black walls and lighted only artificially, is also adjacent to the dynamo room.

A battery room, well ventilated and lighted, and supplied with water, contains a storage battery of thirty-one cells and primary batteries for electrical measurements. Five smaller work rooms are fitted with the usual appliances for electrical measurements.

A commodious lecture room, 36 by 38 feet, on the first floor, is seated for 120 students. The lecture table is provided with gas, water, and electricity; and the windows are easily darkened by means of black screens which run down into pockets when not in use.

The apparatus room is situated between the lecture room and the general laboratory, for elementary work in mechanics, sound, light, and heat. Two rooms, leading from the general laboratory, contain apparatus requiring the use of mercury, and the balances and dividing engine. The two remaining rooms constitute the private laboratory of the Professor of Physics.

The laboratory is supplied with the most modern apparatus from the best American and European makers. In sound, it includes tuning forks and resonators from Koenig of Paris; in light, a spectrometer with 12-inch divided circle, and an ophthalmo-spectroscope from the Geneva Society; in electricity, galvanometers from Edelmann, Hartmann & Braun, and Elliott Brothers, resistance-coils, ranging from the standard ohm up to 250,000 units, from Elliott Brothers and Queen & Co., besides condensers, reading telescopes, and electro-dynamometers. The recent additions include Sir William Thomson's centi-ampère balance, a potential and a current galvanometer, all made by White of Glasgow, and a Weston double-scale voltmeter.

The work in the laboratory is entirely quantitative in character, but provision has been made for illustrating the general principles of physics in the lecture courses.

CHEMICAL LABORATORIES.

The chemical laboratories provide for classes in analytical, general, and organic chemistry, in pharmacy and chemical technology, in metallurgy and assaying. Opportunities are here given for original research in the several branches of chemical science and for independent investigations. In the course of the year classes are formed in thirty-six distinct courses of study of chemistry and its applications. In the greater number of these courses the method of work combines training in laboratory operations with study for recitations and instruction by lectures, —the three requirements being united in one course.

The chemical building, enlarged in 1890, contains in all about 36,000 square feet of floor space. Beside the room for recitations, storage, administration, etc., the laboratories for students have an area of about 25,000 square feet. The laboratory of general chemistry is separately organized and supplied. The laboratories of analytical chemistry, organic chemistry, pharmacy, and chemical technology are all under one organization and are supplied in common. There are separate work-rooms for qualitative analysis, quantitative analysis, iron and steel analysis, pharmaceutical preparations, organic preparations, organic analysis, medical chemistry, and assaying of ores,—as well as rooms for the weighing-balances and instruments of precision, for gas analysis, and for optical work. There are separate rooms for original research. The building contains two lecture rooms, two recitation rooms, and a museum with collections for instruction in chemistry, pharmacy, materia medica, and chemical technology. The work rooms are ventilated by driving fans, and each worker's table is supplied with gas, water, and waste-pipes.

The chemical laboratories are open throughout the college year to all students of the University, and are regularly used by all departments except the Department of Law. They are also open to any person who wishes to pursue special studies therein, provided he complies with the conditions for admission to that department of the University to which the desired special studies properly belong.

Three hundred and eighty students are engaged in these laboratories at the same time, each at a table provided for one worker. During the year from 600 to 800 students complete from one to four courses of study each, in the various branches of chemistry. The students engage in chemical work as it is needful for their different purposes,—the pursuit of science, the preparation for teaching, for the several professions applying chemistry, and for the various chemical arts and industries.

GEOLOGICAL AND ZOOLOGICAL LABORATORIES.

Opportunity for practical work in geology and zoölogy is provided in rooms set apart for this use in the museum building, and in the north wing of the main building. The rooms are furnished with microscopes, photographic instruments, cutting and polishing lathes, and other apparatus for the preparation of specimens. Special encouragement and assistance are given to students wishing to carry on original investigations.

BOTANICAL LABORATORY.

In the botanical laboratory instruction is given in the practical study of the structure and physiology of plants, and opportunity is offered to advanced students for the study of vegetable pathology and other spe-

cial subjects. The laboratory is provided with microscopes, microtomes, micro-chemical reagents, and a fair outfit for physiological experiments.

Students in the elementary courses have constant personal assistance and direction from the instructors. The advanced courses require more independent work, and, as far as possible, every facility will be provided those who have shown themselves capable of carrying on the work of research.

MORPHOLOGICAL LABORATORY.

The morphological laboratory is equipped for the study of the structure and development of vertebrate and invertebrate animals. It is provided with microscopes, microtomes, warming ovens, incubators, aquaria, and other appliances. There is also a collection of alcoholic specimens (many of them from the Naples zoölogical station), of glass models, and of charts illustrating the forms studied. A reference library is shelved in the room.

ENGINEERING LABORATORY.

The building known as the engineering laboratory was enlarged in 1887 by the addition of two wings, which nearly doubled its former capacity, and it now contains about 20,000 square feet of floor space.

The mechanical laboratory, 40 by 80 feet, is devoted to experimental work in connection with the testing of engines, boilers, pumps, injectors, belting, toothed and friction gearing, and lubricants; and to such original work as can be undertaken with advantage. Original work bearing on subjects for theses is especially encouraged. The work also extends to the testing of engines, boilers, and water-wheels of neighboring mills and electric-light plants. The Knowles and the Gordon compound duplex pumping engines at the city water works have been fitted up by the company with especial reference to the convenience of engineering students in making tests. A 100,000 pound Olsen testing-machine is one of the recent additions to the equipment.

The iron room, or machine shop, and the wood room and pattern shop, each 40 by 80 feet, contain the tools and apparatus usually found in first-class establishments. The wood room contains benches for twenty students. The pattern loft, 40 by 80 feet, contains a fine collection of patterns made by students.

The forge shop, 30 by 40 feet, is fitted up with twelve forges, built by students in the laboratory shops. The blast is supplied by a No. 4 Sturtevant pressure blower, and the smoke is cleared away by a No. 31 exhaust fan.

The foundry, 30 by 40 feet, contains an eighteen-inch cupola and brass furnaces, and is supplied with blast by a No. 3 Sturtevant pressure blower.

The central wing is 32 by 54 feet. The first floor contains a large, well-ventilated wash room with closets and other conveniences; an engine room with a 50 H-P Reynolds-Corliss engine; and superintendent's office. The second floor contains a large, well-lighted drawing room, and a blue-print room. The basement and attic are devoted to storage purposes.

In the tower, at an elevation of seventy-five feet, there is a water tank, of one hundred barrels capacity, that can be utilized for experimental work in hydraulics.

New machinery is added to each shop from time to time so that engineering students and others desiring instruction and practice in the use of tools for working in wood and metal may be properly accommodated, and at the same time have opportunity to become familiar with the more common materials and forms of construction used in engineering structures, buildings, and machinery. In all shop work an effort is made to follow the practice of the best shops. Several of the machines in use have been designed and built by the students themselves.

Mr. John M. Smoot, Mr. Robert Winslow, Mr. Horace Purfield, and Mr. Thomas Orr are employed as foremen in the machine shop, the foundry, the wood room, and the forge shop, and they also assist in the work of instruction.

THE HOSPITALS.

During the past few years the facilities for clinical instruction in the two medical schools connected with the University have been largely increased, and they will be still further increased on the completion of the new hospital building now in process of erection, for which the State Legislature and the city of Ann Arbor have together appropriated the sum of \$75,000. The University Hospital is under the direction of the Faculty of the Department of Medicine and Surgery; the Homœopathic Hospital is connected with the Homœopathic Medical College. Further information in regard to the Hospitals is given in connection with the descriptions of the medical schools.

FEES AND EXPENSES.

MATRICULATION FEE.—Every student before entering any department of the University is required to pay a matriculation fee. This fee, which, for citizens of Michigan, is ten dollars, and, for those who come from any other State or country, twenty-five dollars, is paid but once, and entitles the student to the privileges of permanent membership in the University.

ANNUAL FEE.—In addition to the matriculation fee, every student has to pay an annual fee for incidental expenses. This fee is paid the first year of residence at the University, and every year of residence thereafter. Resident graduates are required to pay the same annual fee as undergraduates. The annual fee in the several departments of the University is as follows:

Department of Literature, Science, and the Arts: for Michigan students, twenty dollars; for all others, thirty dollars.

Department of Medicine and Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Department of Law: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

School of Pharmacy: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

Homœopathic Medical College: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

College of Dental Surgery: for Michigan students, twenty-five dollars; for all others, thirty-five dollars.

The matriculation fee and the annual fee must be paid at the beginning of the college year. A by-law of the Board of Regents provides that no student or graduate shall be allowed to enjoy the privileges of the University until he has paid all fees that are due.

LABORATORY EXPENSES.—Students who pursue laboratory courses of study are required to pay for the materials and apparatus actually consumed by them. The deposits required in advance are different for the different courses, ranging from one to twenty dollars. The laboratory expenses of students will vary with their prudence and economy. Experience has shown that in the chemical laboratory the average expense for all courses is about one dollar and twenty cents a week.

DIPLOMA FEE.—The fee for the diploma given on graduation is ten dollars, and the by-laws of the Board of Regents prescribe that no person shall be recommended for a degree until he has paid all dues, including the fee for diploma.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed in which the cost of board is from one dollar and a half to two

dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. The annual expenses of students, including clothing and incidentals, are, on the average, about three hundred and seventy dollars. The University does not undertake to furnish manual labor to students; yet a few find opportunities in the city for remunerative labor.

There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office.

The Woman's League, an organization comprising women from all departments of the University, will have committees in the Ladies' Reading Room, University Hall, during the opening days of the academic year, to give information to women entering the University in regard to rooms, board, and general University work.

RELATION OF STUDENTS TO THE CITY GOVERNMENT.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

AIDS TO MORAL AND RELIGIOUS CULTURE.

Religious exercises are held regularly in the University Chapel, at which attendance is voluntary.

The Students' Christian Association, which has a large membership, holds stated meetings, either for religious or social improvement. Through the enterprising efforts of the Association and the benevolence of those interested in its aims, a spacious and beautiful building, called Newberry Hall, has been erected for its use adjacent to the University Campus.

The churches of the city of Ann Arbor are cordially thrown open to the students, whose interests are largely consulted by the pastors in their pulpit instruction and in their plans of work. There are churches of the following communions in the city: Baptist, Congregationalist, the Disciples, German Lutheran, German Methodist, Methodist Episcopal, Presbyterian, Protestant Episcopal, Roman Catholic, and Unitarian.

In several of the churches, guilds or other societies, consisting chiefly of students, have been organized, both for religious and moral culture, and for social entertainment. The Hobart Guild, connected with St. Andrew's Church (Protestant Episcopal), has a commodious building, called Harris Hall (formerly known as Hobart Hall), planned and equipped for all the objects of the Guild; and two of the several lectureships contemplated in its plans have been endowed, one under the title of the Baldwin Lectures for the Establishment and Defence of Christian Truth, and a second, on Christian Evidences. Courses of Baldwin Lectures have been given annually since the fall of 1886. The Presbyterian church has established the Tappan Presbyterian Association, with an annual course of lectures upon church history and church work. A building to be known as McMillan Hall is now in process of erection, and will contain, when finished, a theological library of several thousand volumes. The Methodist Episcopal church has organized the Wesleyan Guild, with its course of lectures, and has made the beginning of a permanent fund. Unity Club is a society formed by the Unitarian church with similar purposes. The Foley Guild is an organization of Roman Catholic students under the patronage of the Rt. Reverend John S. Foley, bishop of the diocese.

DEPARTMENT OF Literature, Science, and the Arts.

The Department of Literature, Science, and the Arts owes its name to a provision in the legislative act by which the University was organized in the year 1837. In general terms, this department represents the collegiate and technological sides of university work, as distinguished from the work of the professional schools in medicine, law, pharmacy, and dentistry. The courses of instruction are arranged to meet the wants not only of such as are fitted to take up a systematic course of study in the classics, or in science, but also for those whose preparatory studies have not included any ancient or foreign languages. Special students, who wish to pursue miscellaneous studies, are admitted on conditions stated on page 40.

The academic year extends from the first day of October to the Thursday following the last Wednesday in June.

REQUIREMENTS FOR ADMISSION.

Candidates for admission must be at least sixteen years of age, and most present satisfactory evidence of good moral character. They must be provided with credentials from their last instructor, or from the last institution with which they have been connected. These credentials must be presented to the President at his office, before the candidate can enter upon the examination.

Admission of Candidates for a Degree.

[For Admission to Advanced Standing, see page 39.]

[For Admission of Students not Candidates for a Degree, see page 40.]

Any student who desires to become a candidate for a degree must, unless admitted on diploma (see page 41), pass examinations in some one of the group of subjects described below, the group

being determined by the character of the work he intends to pursue, and the degree he desires to take.

FOR THE DEGREE OF BACHELOR OF ARTS.

Candidates for admission will be examined in the following subjects:

1. **ENGLISH LANGUAGE, COMPOSITION, AND RHETORIC.**—The examination will be as follows.

a. A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech.

b. An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing. The subjects for 1891 will be taken from the following works, with the substance of which—the plots, incidents, characters, etc.—it is expected that the student will by careful reading thoroughly familiarize himself:—Shakespeare's *Macbeth*; Goldsmith's *Vicar of Wakefield*; Scott's *Old Mortality*; Longfellow's *Hyperion*. The subjects for 1892 will be taken from Shakespeare's *Henry VIII*; Johnson's *Rasselas*; Dickens's *Tale of Two Cities*; Thackeray's *Adventures of Philip*; Macaulay's *Lays of Ancient Rome*. Equivalents of these will be accepted.

For securing the proper preparation, the following course is recommended: (1) A few lessons and constant practice in the proper use of the *Unabridged Dictionaries*. (2) A review of the elements of *English Grammar* during the last years of the preparatory course. (3) Daily recitations for at least one term in some such work as D. J. Hill's *Elements of Rhetoric and Composition*, or A. S. Hill's *Principles of Rhetoric*. (4) A careful reading of one of Shakespeare's plays, in an annotated edition, as Hudson's, Rolfe's, Meiklejohn's, or one of the Clarendon Press series. (5) Weekly exercises in original composition, for at least two years. Scott and Denney's *Paragraph Writing* will be a useful guide.

2. **HISTORY.**—Myers's *General History* (or, in its stead, that portion of Myers's *History of the Eastern Nations*, that treats of Greece, together with Allen's or Leighton's *History of Rome*); and the *History of the United States* as far as the close of the Revolutionary War.

3. **MATHEMATICS.**—*Algebra.*—Fundamental Rules, Fractions, Simple Equations, Involution and Evolution, the Calculus of Radicals, and Quadratic Equations; i. e., Olney's *Complete School Algebra*, omitting pages 281–334 and pages 381–390, or an equivalent in other authors.

Geometry.—Plane, Solid, and Spherical Geometry, as given in Olney's *New Elementary Geometry*, or an equivalent in other authors.

N. B.—It is very desirable that High Schools whose graduates are received on diploma arrange their courses so as to include a portion of both Algebra and Geometry in their last preparatory year; and it is equally important that other students should do the same if they expect to succeed in the study of mathematics in the University.

4. PHYSICS.—An amount represented by Avery's Natural Philosophy, or Gage's Introduction to Physical Science. Laboratory work in Physics is urgently advised, but is not required.

5. BOTANY.—The elements of Vegetable Anatomy and Physiology, as given in Gray's Lessons, and an analysis and written descriptions of fifty species of phanerogams.

6. LATIN.—*Grammar.*—A thorough preparation in the elements of Etymology, Syntax, and Prosody.

Prose Composition.—Candidates will be asked to translate into Latin a passage of connected English narrative, based upon some portion of the Caesar or Cicero read. As a text-book, Jones's, Collar's, or Daniell's is recommended.

Reading.—Four books of Caesar's Gallic War; six select orations of Cicero; and nine books of Vergil's *Æneid*. For books 7-9 of the *Æneid*, all of the Eclogues, or 1,500 lines of Ovid, may be substituted.

Four years, if possible, should be given to the preparatory work in Latin outlined above. Special care should be taken with the training in Latin Prose Composition. It is hoped that many schools will continue, as heretofore, to prepare students in the whole of the *Æneid*, or an equivalent. Students entering the University thus prepared will receive a certain amount of credit toward graduation.

The Roman method of pronouncing Latin is used at the University.

7. GREEK.—*Grammar.*—Hadley's, or Goodwin's. The etymology must be thoroughly mastered.

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents and to the general principles of syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's *Anabasis*.

The so-called continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's or White's First Lessons in Greek will be found valuable.

Two full years of daily recitation ought to be given to preparation in Greek.

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Candidates will be examined in all the subjects required for the admission of candidates for the degree of Bachelor of Arts (see page 34), excepting what is required in Greek and in Grecian History, and

also in French, or in German, the same as for the degree of Bachelor of Science (see below).

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Two groups of requirements for admission of candidates for the degree of Bachelor of Science are given below:—the first for students who intend to complete the requirements for graduation in General Science, in Chemistry, or in Biology, as given on subsequent pages; the second for students who intend to pursue courses in Civil, Mechanical, Mining, or Electrical Engineering.

I. FOR THE COURSE IN GENERAL SCIENCE, IN CHEMISTRY, OR IN BIOLOGY.

Candidates for admission will be examined in the following subjects:

1. **ENGLISH LANGUAGE, AND MATHEMATICS.**—In both, the same as for the degree of Bachelor of Arts (see page 34).

2. **HISTORY.**—Myers's General History, or an equivalent; and the History of the United States as far as the close of the Revolutionary War.

3. **FRENCH, GERMAN, AND LATIN.**—Candidates may offer either French and German; French and Latin; or German and Latin;—two of these three languages being required. The requirements in each are as follows:

French.—The whole subject of French Grammar. The candidate will be expected to be thoroughly familiar with the formation and use of French verbs, to read at sight easy French, and to translate correctly into French simple English sentences. Two years ought to be given to this study, the first year being spent on the grammar, and the second devoted to reading good modern French, accompanied by grammatical analysis and exercises in writing. Hennequin's French text-books are especially recommended; preparation in Fasquelle or Otto will be accepted.

German.—The whole subject of German Grammar. The candidate will be expected to read easy German at sight, and to translate simple sentences from English into German. To this end he should have devoted two years to the study; one year to the grammar, reader, and the writing of exercises, and a second year to the reading of complete works of literary art. As a text for the second year's study, works in dramatic form, and especially the classical plays of Schiller, are recommended.

Latin.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book; four books of Caesar's

Gallic War, and one of the orations of Cicero. It is expected that about two years will be given to preparation in Latin.

4. PHYSICS, AND BOTANY.—In both, the same as for the degree of Bachelor of Arts (see page 35).

5. CHEMISTRY, GEOLOGY, ZOÖLOGY, PHYSIOLOGY, PHYSICAL GEOGRAPHY, AND ASTRONOMY.—The candidate may offer any *two* of these subjects. The requirements, intended to cover a half year's work in each subject, are as follows:

Chemistry.—Remsen's Briefer Course, Williams's Elementary Chemistry, or an equivalent.

Geology.—Candidates who offer themselves in Geology must be well acquainted with the elements of lithological, dynamical, and historical geology, as presented in Winchell's Geological Studies, or some other good work. Especial stress is laid on familiarity with a dozen or two of the more common species of rocks and their included minerals, on the tables of classification of geological formations, on the general nature of the succession of organic forms, and on the doctrines of sedimentation, erosion, upheaval, and subsidence.

This preparation is intended to furnish some such fitness for more advanced study as is demanded in the departments of mathematics and languages. It is the equivalent of Courses 1 and 2 in the University. Experience proves, however, that these points are not well understood. Most students presenting themselves for examination hitherto, have failed in thoroughness, readiness, and freshness of knowledge. Candidates are expressly notified that a few week's indifferent instruction, two, or three, or four years previously, without use of specimens, and without any field observation, can never supply that clear and ready acquaintance with the subject which is requisite for more advanced work in the University. Still less can a hasty reading up for examination, in the lack of previous thorough study, answer the requirement.

It is understood that Geology is not usually taught in the preparatory schools, especially of Michigan, in such a way as to secure the requisite preparation. Candidates, therefore, who apply without due preparation, can enter on condition, and supply the deficiency by taking Course 1 or 2. But Geology, when offered as one of the elective preparatories, cannot also earn advanced credit for the candidate. Nor, after having earned advanced credit, can it be employed to supply a deficiency in entrance preparation.

Candidates sustaining the required preparatory examination in Geology will be fitted to take Course 3 in the first semester, or Courses 5 and 6 in the second semester.

Zoology.—Packard's Zoölogy, or Nicholson's Manual of Zoölogy.

Physiology.—Martin's The Human Body.

Physical Geography.—Hinman's Eclectic Physical Geography, or an equivalent.

Astronomy.—Newcomb and Holden's Astronomy, school edition, Young's Elements of Astronomy, or an equivalent. A knowledge of the principal constellations will be required.

II. FOR THE COURSES IN ENGINEERING.

Candidates for admission will be examined in the following subjects:

1. ENGLISH LANGUAGE.—The same as for the degree of Bachelor of Arts (see page 34).

2. MATHEMATICS.—*Algebra and Geometry*.—The same as for the degree of Bachelor of Arts (see page 34).

Trigonometry.—Plane Trigonometry as given in Olney's Elements of Trigonometry, or an equivalent in other authors. A candidate who has had no opportunity for preparation in Trigonometry may be admitted, if satisfactory examinations are passed in the other subjects, but he will be required to make up the deficiency by extra work in the University classes in that subject.

3. HISTORY.—The same as for the Course in General Science (see page 36).

4. PHYSICS.—The same as for the degree of Bachelor of Arts (see page 35).

5. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see below).

6. CHEMISTRY, GEOLOGY, ZOÖLOGY, PHYSIOLOGY, PHYSICAL GEOGRAPHY, AND ASTRONOMY.—In any two of these subjects (see page 37).

FOR THE DEGREE OF BACHELOR OF LETTERS.

Candidates for admission will be examined in the following subjects:

1. ENGLISH LANGUAGE.—The same as for the degree of Bachelor of Arts (see page 34). Inasmuch as no foreign language is required in preparation for this Course, it will be necessary, in order to secure a corresponding grade of attainments, to give more time to the study of the English language than is required in preparation for the other Courses. It is expected that the preparatory schools will devote at least two years of daily recitation to word-analysis, sentence-analysis, composition, and the elements of Rhetoric.

2. ENGLISH LITERATURE.—Daily recitations for at least one year will be requisite. Stopford A. Brooke's Primer, or any one of the Manuals, may be used for an outline of the subject. As much time as practicable should be given to the careful reading and study of representative authors in each period. Candidates who have devoted special time to the subject, may apply for advanced standing in English Literature.

3. MATHEMATICS.—The same as for the degree of Bachelor of Arts (see page 34).

4. **PHYSICS, AND BOTANY.**—In both, the same as for the degree of Bachelor of Arts (see page 35).

5. **CHEMISTRY, GEOLOGY, ZOÖLOGY, PHYSIOLOGY, PHYSICAL GEOGRAPHY, AND ASTRONOMY.**—In any *three* of these, the same as for the degree of Bachelor of Science (see page 37).

6. **HISTORY.**—Myers's General History, or an equivalent; Johnston's History of the United States; and Ransome's History of England.

7. **CIVIL GOVERNMENT.**—Fiske's, Macy's, or an equivalent.

8. **FRENCH, GERMAN, AND LATIN.**—In place of the *English History* and the *three optional sciences* specified above, the candidate for admission may present *French*, or *German*, or *Latin*, in amount equal to that exacted of candidates for the degree of Bachelor of Science (see page 36). This means about two years' study in some one of these three languages.

With respect to the option here allowed, it may be observed that inasmuch as a large part of the work required in the University for the degree of Bachelor of Letters consists of French and German, students who intend to take this degree will find it advantageous to begin at least one of these languages in their preparatory course.

Students will be examined on subjects rather than on specified text-books. Candidates who have not pursued the exact course marked out above will be allowed to present other subjects as equivalents, provided they have the preparation necessary to enter upon the studies required for the degree of Bachelor of Letters, as those studies are taught in the University.

Admission to Advanced Standing.

1. Candidates for advanced standing who do not come from some other university or college will be examined in the studies prescribed for admission, and also in such undergraduate studies as they may ask to be credited with in advance.

2. Students who have completed at least one year's college work in an approved college, and who bring explicit and official certificates describing their course of study and scholarship, and testifying to their good character, will be admitted without examination, except such as may be necessary in order to determine what credit they are to receive for work done in the college from which they have come, and what courses of study they may profitably pursue here. Students coming from colleges whose requirements for admission are substantially equivalent to those of this department of the University may thus expect to be able to go on with their work without loss of standing.

3. All students who wish to obtain advance credit for work completed prior to admission to this Department, should make application to the President at the time of matriculation, or as soon thereafter as practicable, and should secure such credits within one year from the date of matriculation. Blank forms for this purpose are provided by the Registrar. After a student's credit has once been adjusted on this account, it cannot be reopened without special vote of the Faculty.

Admission of Students not Candidates for a Degree.

Persons who desire to pursue studies in this Department, and do not desire to become candidates for a degree, will be admitted on the following conditions:

1. All persons under twenty-one years of age must pass the entrance examinations required of candidates for some degree, as described on previous pages.

2. Persons over twenty-one years of age must show that they have a good knowledge of English and are otherwise prepared to pursue profitably the studies they may desire to take up.

3. Should a student who enters under the preceding provision (2), subsequently become a candidate for graduation, he must pass all the examinations for admission required of such a candidate, at least one year previous to the time when he proposes to graduate; and in case he wishes to obtain credit for any work completed prior to his admission to this Department, he must make previous application to the President and secure his credit at the time of passing his admission examinations.

Times of Examinations.

An examination for admission to the Department of Literature, Science, and the Arts, will be held on Saturday and Monday, June 20 and 22, 1891; and another beginning on Thursday, September 24, and continuing through the Friday, Saturday, Monday, and Tuesday following. The examinations will begin at nine o'clock A. M. of each day. Candidates may take their examinations at either of these times, or may take a part in June, and a part in September. In

either case it is particularly desired that they present themselves on the first day of the examination.

Examinations for admission will also be held at Chicago, and possibly at some other western cities, on Tuesday and Wednesday, June 23 and 24, 1891. The place and the hours will be announced in the newspapers of those cities.

Admission on Diploma.

The privilege of sending pupils for admission on diploma, formerly limited to approved schools in Michigan, is now extended to include schools in other States.

On request of the school board in charge of any school, the Faculty will designate a committee to visit the school and report upon its condition. Usually the committee will consist of members of the Faculty; but whenever, owing to the great distance of a school from Ann Arbor, or for any other reason, this is impracticable, other persons may be designated to perform, under the direction of the Faculty, the work of inspection.

If the Faculty are satisfied from the report of their committee that the school is taught by competent instructors, and is furnishing a good preparation to meet the requirements for admission of candidates for any one or more of our degrees, then the graduates from *the approved preparatory course or courses* will be admitted to the University without further examination, and permitted to enter upon such undergraduate work as the preparatory studies contemplated. They must present to the President, within a year and three months after their graduation, the diplomas of their school board, certifying that they have sustained their examinations in all the studies prescribed for admission as candidates for some one of our degrees. They will also be required to appear at once in their places; otherwise they can be admitted only upon examination.

The schools which shall be approved shall be entitled to send their graduates on diploma for a period of three years (inclusive of the year of visitation) without further inspection, provided that the Faculty are satisfied that within this period no important changes affecting the course of study and the efficiency of the instruction

make another inspection necessary. Otherwise, the Faculty reserve the right to require another inspection if the relation between the school and the University is to be maintained. Should the authorities of any school at any time within this period desire that a committee of inspection visit their school, the Faculty will always grant such a request if it is practicable.

It is expected that the superintendent of each approved school shall annually, at a date not later in the year than March first, send to the President a catalogue of the school if one is printed. If no catalogue is published, he will be expected to send a statement, giving the names of the teachers, the number of pupils, and a description of the courses of study.

A circular giving fuller details on this subject can be obtained on application to the President.

The following list comprises the schools approved as qualified to prepare students for admission on diploma in the year 1890. Except where otherwise indicated, the places named are in Michigan, and the school approved is the public high school of the locality.

1. For courses leading to all degrees, viz., A. B., PH. B., B. S., and B. L.: Allen Academy, Chicago, Ill.; Ann Arbor; Battle Creek; Bay City; Benton Harbor Normal and Collegiate Institute; Charlotte; Coldwater; Decatur, Ill.; Detroit; Flint; Grand Rapids; Harvard School, Chicago, Ill.; Hill School, Pottstown, Pa.; Hyde Park, Ill.; Ionia; Jackson; Kansas City, Mo.; Lake View, Ill.; Manistee; Marquette; Michigan City; Michigan Military Academy, Orchard Lake; Minneapolis, Minn.; Monroe; Muskegon; Oak Park, Ill.; Ottawa, Ill.; Peoria, Ill.; Pontiac; Port Huron; Rockford, Ill.; Saginaw (East Side and West Side); Springfield, Ill.; St. Paul, Minn.; University School, Chicago, Ill.; Vermont Academy, Saxton's River, Vt.; Ypsilanti.
2. For courses leading to the degrees of A. B., B. S., and B. L.: Jefferson Township, Ill.
3. For courses leading to the degrees of PH. B., B. S., and B. L.: Adrian; Allegan; Alpena; Big Rapids; Birmingham; Chicago, Ill. (North Side, South Side, and West Side); Freeport, Ill.; Joliet, Ill.; Kenwood Institute, Chicago, Ill.; Lake, Ill.; Lansing; La Porte, Ind.; Marshall; Niles; Owosso; Traverse City; West Bay City
4. For courses leading to the degrees of A. B., and PH. B.: Normal University, Academic Department, Normal, Ill.
5. For courses leading to the degrees of A. B., and B. L.: Greenville.
6. For courses leading to the degrees of PH. B., and B. L.: Corunna; Fenton.
7. For courses leading to the degrees of B. S., and B. L.: Benton Harbor; Eaton Rapids; Hastings; Mt. Clements; Sturgis; Vassar.
8. For course leading to the degree of PH. B.: Aurora, Ill. (East Side); St. Clair.
9. For course leading to the degree of B. S. (In General Science): Ludington.
10. For course leading to the degree of B. S. (In Engineering): Manual Training School, Chicago, Ill.
11. For course leading to the degree of B. L.: Albion; Caro; Cedar Springs; Grand Haven; Hillsdale; Howell; Jonesville; Raisin Valley Seminary; Toledo, O.; Utica.

Total. 82 schools

COURSES OF INSTRUCTION.

A large number of Courses of study are offered in the various branches of learning, from which the student may make his choice, subject to certain regulations prescribed by the Faculty and to be found on a subsequent page. Further particulars concerning the Courses are given to students in a special Annual Announcement.

The Courses offered are subject to change from year to year. Those offered for the year 1890-91 are as follows:*

GREEK. †

All students except those who are admitted to advanced standing, are required to pursue Course 1 before passing on to the other Courses. The Teachers' Seminary is open only to those who have completed Courses 1, 2, 3, 4, and either 5a or 5b.

FIRST SEMESTER.

1. Lysias; Xenophon's Symposium. Sec. I, *Tu, W, Th*, 9½-10½, and *F*, 10½-11½. Professor PATTENGILL. Sec. II, *Tu, W, Th, F*, 10½-11½. Dr. FAY.
4. Demosthenes (De Corona); Studies in the Attic Orators. *M, Tu, W, Th*, Sec. I, 10½-11½; Sec. II, 11½-12½. Professor PATTENGILL.
- 6a. Teachers' Seminary. Lectures on Greek Grammar. *W, F*, 3-4. Professor D'OOGÉ.

In connection with Course 6a, Course 13 in German is recommended.

- 7a. Seminary in Tragedy. Aeschylus (Prometheus); Sophocles (Oedipus Tyrannus); Euripides (Medea). *M*, 2-4. *Two-fifths Course*. Professor D'OOGÉ.

Course 7a must be preceded by Course 5a or 5b.

- 8a. History of Greek Art from the beginnings to the Roman period. Von Reber's History of Ancient Art and Collignon's Manual of Greek Archæology will be made the basis of a more general study. *Tu, Th*, 3-4. Professor D'OOGÉ.

Course 8a is open to candidates for the degree of A. B., and also, so far as there is room, to candidates for the degree of Ph. B., the class being limited in number to twenty-four.

* For explanation of the terms *one-fifth Course*, *two-fifths Course*, etc., see Requirements for Graduation.

† SCHOOL OF CLASSICAL STUDIES AT ATHENS.—This University, through the generosity of some of its friends, has become a contributor to the support of the American School of Classical Studies at Athens. The school affords facilities for archæological and classical investigation and study in Greece, and graduates of the Department of Literature, Science, and the Arts of this University are entitled to all its advantages without expense for tuition. Professor M. L. D'Oogé was director of the School for 1886-87.

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13. Graduate Seminary. Interpretation of Greek Inscriptions and study of dialects. *Tu*, 4-6. *Two-fifths Course*. Professor D'OOGÉ.
14. Selections from the Greek Epic and Lyric Poets. *W*, *F*, 2-3. Professor D'OOGÉ.
15. Xenophon (Memorabilia). *M*, *F*, 9½-10½. Professor PATTENGILL.

SECOND SEMESTER.

2. Homer (Odyssey). Sec. I, Books XIII-XXIV, *Tu*, *W*, *Th*, 11½-12½. Professor PATTENGILL. Sec. II, Selections from Books I-XII, *Tu*, *W*, *Th*, 10½-11½. Dr. FAY.
Sec. I is for students who have read one or more Books of Homer in the preparatory course.
3. History of Greek Literature. *M*, 4-5. Professor D'OOGÉ.
5. Dramatic Poetry. This course may be elected as
 - 5a. Sophocles (Antigone); Aristophanes (Frogs). *Tu*, *W*, *Th*, *F*, 4-5. Professor D'OOGÉ;
 - or 5b. Euripides (Bacchæ); Aristophanes (Frogs); *M*, *Tu*, *W*, *Th*, 10½-11½. Professor PATTENGILL.
- 6b. Teachers' Seminary. Greek Prose Composition. *Tu*, *Th*, 11½-12½. Professor D'OOGÉ.
- 7b. Seminary in Euripides. *F*, 9½-11½. *Two-fifths Course*. Professor PATTENGILL.
9. Theocritus. *M*, *W*, 9½-10½. Professor PATTENGILL.
- 9a. Bion and Moschus. *Th*, 9½-10½. Professor PATTENGILL.
10. Plato (Gorgias, and Phædo). *Tu*, *F*, 3-4. Professor D'OOGÉ.
12. Greek Antiquities. Lectures on the public and private life and customs of the Greeks, illustrated by stereopticon views. *W*, 2-3. Professor D'OOGÉ.
16. Modern Greek (Selections from Modern Greek writers). *M*, *W*, 3-4. Professor D'OOGÉ.

LATIN.

Courses 1 and 2 must precede all the rest.

In addition to work in the Graduate Seminary (Courses 17 and 18), and upon subjects for investigation individually assigned, graduate students are admitted to any of the Courses designated below which they may wish to pursue.

FIRST SEMESTER.

1. Livy (Books I, XXI); Prose Composition. *Tu* *W*, *F*, Sec. I, 9½-10½; Sec. II, 11½-12½; Sec. III, 2-3; Sec. IV, 3-4; Sec. V, 4-5. Assistant Professor ROLFE, Mr. CLEMENT, and Dr. FAY.
3. Horace (Selections from Odes and Satires). Studies in Roman archaeology and life. *Tu*, *W*, *Th*, *F*, Sec. I, 11½-12½. Mr. CLEMENT. Sec. II, 2-3; Sec. III, 3-4. Assistant Professor ROLFE. Sec. IV, 4-5. Mr. CLEMENT.

5. The Methods, Province, and Scope of Classical Philology. Lectures. *M, W, 4-5.* Professor KELSEY.

In connection with Course 5, students who intend to take Course 6 are advised also to take Course 13 in German.

7. Pliny (Selected Letters). *Tu, Th, 9½-10½.* Professor KELSEY.
 9. Tacitus (Agricola, Germania, Selections from the Annals). *Tu, Th, 8½-9½.* Mr. CLEMENT.
 11. Latin Writing. *M, Th, Sec. I, 10½-11½; Tu, Th, Sec. II, 11½-12½.* Assistant Professor ROLFE.
 13. Lucretius (De Rerum Natura). *W, F, 9½-10½.* Professor KELSEY.
 15. Teachers' Seminary (Caesar, Cicero). *M, W, 5-6.* Professor KELSEY.
 Course 15 is open only to those who receive special permission.
 17. Seminary in Latin Philology (for graduate students). *Th, 4-6.* Professor KELSEY.

Course 17 is not open to undergraduate students.

SECOND SEMESTER.

2. Catullus (Selections); Terence (two plays); Cicero (De Senectute). *M, Tu, W, F, Sec. I, 9½-10½; Sec. II, 11½-12½; Sec. III, 2-3; Sec. IV, 3-4; Sec. V, 4-5.* Assistant Professor ROLFE, Mr. CLEMENT, and Dr. FAY.
 4. Roman Literature, with selections from representative authors. *Tu, W, Th, F, Sec. I, 11½-12½.* Mr. CLEMENT. Sec. II, 2-3; Sec. III, 3-4. Assistant Professor ROLFE. Sec. IV, 4-5. Mr. CLEMENT.
 6. Latin Grammar. Lectures. *W, F, 9½-10½.* Professor KELSEY.
 8. Quintilian (Books X, XII). *Tu, Th, 9½-10½.* Professor KELSEY.
 10. Cicero (Tusculan Disputations). *Tu, Th, 8½-9½.* Mr. CLEMENT.
 Course 10 is not given in 1890-91.
 11a. Latin Writing. *One-fifth Course.* Hour arranged with instructor. Assistant Professor ROLFE.
 12. Latin Inscriptions. *W, F, 8½-9½.* Assistant Professor ROLFE.
 14. Seminary. Roman Archæology. Topography and Architectural History of the City of Rome; Sculpture and Painting in the Roman Period. *M, W, 4-5.* Professor KELSEY.
 Students are advised to take Course 14 immediately after Course 8a in Greek.
 16. Teachers' Seminary (Vergil). *M, W, 5-6.* Professor KELSEY.
 Course 16 is open only to those who receive special permission.
 18. Seminary in Latin Philology (for graduate students). *Th, 4-6.* Professor KELSEY.

Course 18 is not open to undergraduate students.

SANSKRIT AND COMPARATIVE PHILOLOGY.

Courses 1 to 4, inclusive, are open to candidates for a degree in Arts, who have pursued college courses in Greek and Latin, or to

students of one of these languages and Germanics of the early period.

Courses 5 and 6 are open to all advanced language students at the option of the instructor. They do not require a knowledge of Sanskrit.

FIRST SEMESTER.

1. Beginners' Course. Recitations from Perry's Primer, accompanied by informal comparisons with the nearly related Indo-European languages. *M, Th*, 11½-1. *Three-fifths Course*. Dr. FAY.
3. Second-year Course. Hitopadeṣah, Katha-Sarit-Sagarah, and Manava-Dharma-Ṣāstram (Selections from Lanman's Sanskrit Reader). Whitney's Sanskrit Grammar for reference. *M, Th*, 5-6. Dr. FAY.
- [5. Lectures on the Agglutination Theory. *One-fifth Course*. Dr. FAY. Course 5 is not given in 1890-91.]

SECOND SEMESTER.

- 2 Continuation of Course 1. Interpretation of Nalopakhyanam and Hitopadeṣah (Selections from Lanman's Sanskrit Reader). Whitney's Sanskrit Grammar for reference. *M, Th*, 11½-1. *Three-fifths Course*. Dr. FAY.
4. Advanced Reading. Rig Veda (Selections from Lanman's Sanskrit Reader). Kaegi's Rig Veda. *M, Th*, 5-6. Dr. FAY.
6. Lectures on the Comparative Phonology of Greek and Latin. *One-fifth Course*. Hour arranged with instructor. Dr. FAY.

HEBREW.

FIRST SEMESTER.

1. Beginners' Course in Hebrew. The elements of grammar and the mastery of Genesis I-III. Text-books: Harper's Hebrew Method and Elements of Hebrew. *M, W*, 10½-11½. Dr. BELSER.
3. Selected Psalms. Lectures and Recitations. Study of Hebrew syntax (noun and verb). Rapid reading in Samuel. *Tu, Th*, 10½-11½. Dr. BELSER.

SECOND SEMESTER.

2. Selections from Genesis and Deuteronomy. Rapid reading of Ruth and Joshua. Grammar completed. *M, W*, 10½-11½. Dr. BELSER.
4. Advanced Course. Studies in the Minor Prophets. Rapid reading in Exodus. Hebrew syntax (sentence). *Tu, Th*, 10½-11½. Dr. BELSER.

ASSYRIAN.

FIRST SEMESTER.

1. Assyrian for beginners Lyon's Manual and Delitzsch's Lesestücke. Principles of the Assyrian grammar with exercises in the transliteration and interpretation of cuneiform texts. *Two-fifths Course*. Hours arranged with instructor. Dr. BELSER.

Course 1 must be preceded by Courses 1 and 2 in Hebrew.

SECOND SEMESTER.

2. Assyrian for advanced students. Interpretation of historical and other texts. *Two-fifths Course. Hours arranged with instructor.*
Dr. BELSER.

FRENCH.

Except for students of Engineering, for whom special courses, designated by letters of the alphabet, are arranged, Courses 1 and 2 must precede all others. Students who are required to take eight hours in French beyond Courses 1 and 2, are allowed to select from the Courses open to them.

FIRST SEMESTER.

1. Beginners' Course. Grammar and easy reading. *M, W, Th, F*, Sec. I, 8½-9½. Assistant Professor DE PONT. Sec. II, 8½-9½; Sec. III, 9½-10½. Mr. MARDEN. Sec. IV, 9½-10½; Sec. V, 10½-11½. Mr. LEVI. Sec. VI, 2-3. Mr. MARDEN. Sec. VII, 3-4. Mr. LEVI.
3. Composition and Translation from English into French. *M, Th*, 9½-10½. Assistant Professor DE PONT.
6. Prose Writers of the Nineteenth Century: Mme. de Staël; Sainte-Beuve; Mérimée. *W, F*, Sec. I, 10½-11½; Sec. II, 11½-12½. Professor WALTER.
8. French Classic Dramas. *M, W, F*, Sec. I, 11½-12½. Mr. MARDEN. Sec. II, 11½-12½. Mr. LEVI.
10. Poets of the Nineteenth Century: A. de Musset. *M, Th*, 10½-11½. Assistant Professor DE PONT.
12. LaFontaine (Choix de Fables). Advanced practice in conversation and analysis. *W, F*, 10½-11½. Assistant Professor DE PONT.
Course 12 must be preceded by Course 8.
14. Seminary. Mémoires of the Seventeenth and Eighteenth Centuries. *M*, 9½-10½, and an additional hour arranged with instructor. Professor WALTER.
16. Pronunciation and Reading. *Th*, 2-3. Assistant Professor DE PONT.
18. Study of Old French. *M, Tu*, 3-4. Mr. MARDEN.

SECOND SEMESTER.

2. Modern Prose and Plays; Grammar continued. *M, W, Th, F*, Sec. I, 8½-9½. Assistant Professor DE PONT. Sec. II, 8½-9½; Sec. III, 9½-10½. Mr. MARDEN. Sec. IV, 9½-10½; Sec. V, 10½-11½. Mr. LEVI. Sec. VI, 2-3. Mr. MARDEN. Sec. VII, 3-4. Mr. LEVI.
4. Scientific Reading. La Nature. *M, W, Th, F*, 2-3. Assistant Professor DE PONT.
5. Advanced Composition. *M, Th*, 9½-10½. Assistant Professor DE PONT.
7. Classic French Prose. Pascal; La Bruyère; Voltaire. *W, F*, Sec. I, 11½-12½. Mr. MARDEN. Sec. II, 11½-12½. Mr. LEVI.
9. Montaigne. *Tu, Th*, 9½-10½. Professor WALTER.

Course 9 is open to all candidates for the degree of A. B., who have completed Courses 1 and 2, and to such others as receive special permission.

11. Prose Writers of the Eighteenth Century: Rousseau (*Contrat Social* and Selections). *M, W, F, 11½-12½*. Professor WALTER.

Course 11 is open only to such as receive special permission.

13. French Lyrics. *La Lyre Francaise*. *W, F, 9½-10½*. Assistant Professor DE PONT.

15. Seminary. Victor Hugo (Dramas). *Th, 10½-12½*. *Two-fifths Course*. Assistant Professor DE PONT.

Course 15 is not given in 1890-91.

17. Teachers' Course. *W, F, 10½-11½*. Professor WALTER.

Course 17 is open only to such as receive special permission.

19. Conversational Drill, continuation of Course 16. *M, Th, 10½-11½*. Assistant Professor DE PONT.

20. Study of Old French, continuation of Course 18. *M, Tu, 3-4*. Mr. MARDEN.

SPECIAL COURSES IN FRENCH FOR STUDENTS OF ENGINEERING.

Students of Engineering are not admitted to the other Courses offered in French, except by special permission.

FIRST SEMESTER.

- B. Narrative Prose. Daudet's *Choix de Contes*; Souvestre's *Confession d'un Ouvrier*. *M, W, 2-3*. Mr. SWIGGETT.

Course B is open to those who have taken Course A, or who have passed an admission examination in French.

- D. Scientific Reading. *W, F, 9½-10½*. Mr. SWIGGETT.

SECOND SEMESTER.

- A. Beginners' Course. Grammar and Reader. *M, W, Th, F, 2-3*. Mr. SWIGGETT.

- C. Descriptive Prose. *M, W, 9½-10½*. Mr. SWIGGETT.

ITALIAN.

FIRST SEMESTER.

2. Continuation of Course 1. Ariosto or Tasso. *Tu, Th, 11½-12½*. Professor WALTER.

SECOND SEMESTER.

1. Grandgent's Italian Grammar. Easy Prose. *Tu, Th, 11½-12½*. Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 2 in French.

3. Dante (*Divina Commedia*). Lectures and recitations. *Tu, Th, 10½-11½*. Professor WALTER.

Course 3 must be preceded by Courses 1 and 2.

SPANISH.

FIRST SEMESTER.

1. Knapp's Spanish Grammar and Spanish Readings. *Tu, Th, 8½-9½.* Professor WALTER.

Course 1 is open only to those who have completed Courses 1 and 2 in French.

SECOND SEMESTER.

2. Continuation of Course 1. *Tu, Th, 8½-9½.* Professor WALTER.

GERMAN.

Except for students of Engineering, for whom there are special Courses designated by letters of the alphabet, the required work in German is all included in Courses 1, 2, 3, 4, which should be taken in the order of the numerals. The student must take, for the elementary requirement of eight hours, Course 1 and one option in Course 2; for the advanced requirement of eight hours, one option in Course 3, Course 4a, and another option in Course 4, the remaining hour or hours being chosen at pleasure; for the requirement of sixteen hours, the above two combined. The numbers above 4 designate advanced electives which can be taken only after conference with the instructor concerned.

FIRST SEMESTER.

1. Beginners' Course. Joynes-Meissner's German Grammar, and Joynes's German Reader. *Tu, W, Th, F, Sec. I, 9½-10½; Sec. II, 10½-11½.* Mr. WINKLER. Sec. III, 2-3. Dr. BELSER. Sec. IV, 4-5. Dr. HENCH.
3. Plays of Goethe and Lessing:—
 - 3a. Goethe's *Torquato Tasso*. *M, W, F, Sec. I, 2-3.* Dr. HENCH. Sec. II, 3-4. Dr. BELSER.
 - 3b. Goethe's *Egmont*. *M, W, F, 8½-9½.* Mr. WINKLER. Sec. II, 4-5. Dr. BELSER.
 - 3c. Lessing's *Nathan der Weise*. *M, W, F, Sec. I, 11½-12½.* Mr. WINKLER. Sec. II, 3-4. Dr. HENCH.
 - 3d. Goethe's *Götz von Berlichingen*. *Tu, Th, 2-3.* Dr. HENCH.
 - 3e. Goethe's *Iphigenie and Stella*. *Tu, Th, 11½-12½.* Mr. WINKLER.
 - 3f. Lessing's *Minna von Barnhelm and Emilie Galotti*. *Tu, Th, 3-4.* Dr. BELSER.
5. Goethe's *Faust* (First Part). *Tu, Th, 8½-9½.* Professor THOMAS.
7. Middle High German. Readings from the *Nibelungenlied* and *Walter von der Vogelweide*, with lectures on mediæval German saga, life, and art. *M, W, F, 9½-10½.* Professor THOMAS.
9. Teachers' Seminary. Lectures in German; practice in writing and speaking German; discussion of assigned masterpiece in a German essay. *M, W, F, 8½-9½.* Professor THOMAS.

11. History of German Literature. Recitations from a manual (Wenckebach's *Deutsche Litteraturgeschichte*) with lectures and reports on assigned reading. *Tu, Th, 9½-10½*. Professor THOMAS.
13. Linguistic Science. Fundamental ideas, with an introduction to comparative Indo-European, and then, more especially, to Germanic philology. Lectures. *Tu, Th, 10½-11½*. Professor THOMAS.
15. Literature of the Reformation period. Recitations and lectures. *Two-fifths Course. Hours arranged with instructor.* Mr. WINKLER.

SECOND SEMESTER.

2. Plays of Schiller, with exercises in writing German:—
 - 2a. *Die Jungfrau von Orleans.* *Tu, W, Th, F, Sec. I, 9½-10½; Sec. II, 10½-11½.* Mr. WINKLER.
 - 2b. *Wilhelm Tell.* *Tu, W, Th, F, Sec. I, 2-3. Dr. BELSER. Sec. II, 4-5. Dr. HENCH.*
4. German composition and rapid reading in modern prose:—
 - 4a. (Conducted in German). Colloquial practice, review of grammar, translation from English into German. *Tu, Th, Sec. I, 8½-9½; Sec. II, 11½-12½.* Mr. WINKLER. *Sec. III, 3-4; Sec. IV, 4-5. Dr. BELSER. Sec. V, 2-3; Sec. VI, 3-4. Dr. HENCH.*
 - 4b. Goethe's prose with recent minor classics. *W, F, Sec. I, 3-4; Sec. II, 4-5. Dr. BELSER.*
 - 4c. Heine's prose with recent minor classics. *W, F, Sec. I, 8½-9½. Mr. WINKLER. Sec. II, 5-6. Dr. HENCH.*
 - 4d. Schiller's prose with recent minor classics. *W, F, 2-3. Dr. HENCH.*
 - 4e. Lessing's prose with recent minor classics. *W, F, 3-4. Dr. HENCH.*
 - 4f. Scientific Literature. *W, F, 5-6. Professor THOMAS.*
6. Goethe's *Faust* (Second Part). *Tu, Th, 8½-9½.* Professor THOMAS.
8. Old High German. Grammatical and etymological study of easy texts, with lectures on the history of the German language. *M, W, 9½-10½.* Dr. HENCH.
10. Teachers' Seminary. Continuation of Course 9. *M, W, F, 8½-9½.* Professor THOMAS.
12. History of German Literature. Continuation of Course 11. *Tu, Th, 9½-10½.* Professor THOMAS.
14. Laokoon. A study of Lessing's essay with comparison of the critiques by Goethe and Herder. *W, F, 10½-11½.* Professor THOMAS.
16. Lyric Poetry. Buchheim's *Deutsche Lyrik.* *W, F, 11½-12½.* Mr. WINKLER.

SPECIAL COURSES IN GERMAN FOR STUDENTS OF ENGINEERING.

Students of Engineering are not admitted to the other Courses offered in German except by special permission.

FIRST SEMESTER.

- A. Beginners' Course. Joynes-Meissner's German Grammar, and Joynes's German Reader. *Tu, W, Th, F*, Sec. I, 8½-9½; Sec. II, 9½-10½. Mr. SWIGGETT.
- C. Descriptive Prose. Deutschland und die Deutschen. *Tu, Th*, 3-4. Mr. SWIGGETT.

SECOND SEMESTER.

- B. Narrative Prose. Joynes's Reader; Fouqué's Undine. *Tu, Th*, 8½-9½. Mr. SWIGGETT.
- D. Technical Reading. Schroot's Der Dampf. *W, F*, 8½-9½. Mr. SWIGGETT.

GOTHIC.

SECOND SEMESTER.

1. Gothic Grammar, with interpretation of texts and comparative study of Germanic word forms. Text-book: Braune's Gotische Grammatik, or the translation of the same by G. H. Balg. *Two-fifths Course. Hours arranged with instructor.* Professor THOMAS.

SWEDISH.

Open only to students who receive special permission.

FIRST SEMESTER.

1. Modern Swedish Grammar, and the reading of prose selections. *One-fifth Course. Hour arranged with instructor.* Professor THOMAS.

SECOND SEMESTER.

2. Tegnér's Frithjof's Saga and Selections from Runeberg. *One-fifth Course. Hour arranged with instructor.* Professor THOMAS.

DANISH-NORWEGIAN.

Open only to students who receive special permission.

FIRST SEMESTER.

- [1. Modern Danish-Norwegian Grammar and the reading of prose selections. *One-fifth Course. Hour arranged with instructor.* Professor THOMAS.

Course 1 is not given in 1890-91.]

SECOND SEMESTER.

- [2. Readings from Andersen and Ibsen. *One-fifth Course. Hour arranged with instructor.* Professor THOMAS.

Course 2 is not given in 1890-91.]

ENGLISH AND RHETORIC.

FIRST SEMESTER.

1. Practical Rhetoric and Composition. Essays and Speeches. *M, Th*, Sec. I, 2-3; Sec. II, 3-4. *Tu, F*, Sec. III, 2-3; Sec. IV, 3-4. *Tu, Th*, Sec. V, 5-6. Mr. DENNEY.

In the first semester Course 1 is designed especially for candidates for the degrees of A. B. and Ph. B.; in the second semester, for all other students.

2. Science of Rhetoric. Essays. *M, W*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor SCOTT.

Course 2 must be preceded by Course 1, and by Course 1 or Course 2 in Philosophy.

3. Old English (Anglo-Saxon). Text-books: Sweet's Anglo-Saxon Primer and Sweet's Reader (Prose). *M, W*, Sec. I, 4-5; Sec. II, 5-6. Assistant Professor HEMPL.

It is recommended that Course 3 be preceded by at least one year's study of German.

5. English Literature; Period of Late Middle English. Text-books: Morris and Skeat's edition of the Prologue and Knight's Tale, and Morley and Tyler's Manual of English Literature, Part III. *Tu, Th*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor HEMPL.

Course 5 must be preceded by Course 1, and it is recommended that it be preceded by Courses 3 and 4 and at least one year's study of French and one year's study of German.

7. Middle English. Piers Plowman and the Poems of Laurence Minot. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor HEMPL.

Course 7 must be preceded by Courses 1 and 3.

9. History of the English Language. Lectures. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor HEMPL.

Course 9 is open to students who have passed Courses 1 and 3. It is particularly recommended to those who expect to teach English.

11. English Literature; Study of Masterpieces: More's Utopia; Bacon's Essays; Milton's Areopagitica; Burke's Reflections on the French Revolution; Carlyle's Sartor Resartus; George Eliot's Silas Marner; Spenser's Faery Queen, Book I; Shakespeare's Sonnets; Milton's Paradise Lost; Dryden's Absalom and Achitophel; Pope's Essay on Man; Wordsworth's Excursion; Tennyson's Princess. *Twice a week (once two hours; once one hour). M*, Sec. I, 4-6; *Tu*, Sec. II, 4-6; *W*, Sec. III, 9½-11½; Sec. IV, 4-6; *Th*, Sec. V, 4-6; *F*, Secs. I, II, III, IV, and V, 4-5. *Three-fifths Course.* Professor DEMMON.

Course 11 must be preceded by Courses 2, 5, 6.

15. Principles of Style. Inductive study of masterpieces of English prose, with a view to verifying rhetorical principles. Lectures, readings, and discussions. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor SCOTT.

Course 15 is open to those who have taken or are taking Course 2.

SECOND SEMESTER.

1. Practical Rhetoric and Composition. Essays and Speeches. *M, W*, Sec. I, 2-3; Sec. II, 3-4. *Tu, Th*, Sec. III, 2-3; Sec. IV, 3-4; Sec. V, *at an hour arranged with instructor*. Mr. DENNEY.
See note to Course 1 in first semester.
- 1a. Paragraph Writing. *Two-fifths Course. Hours arranged with instructor*. Mr. DENNEY.
Course 1a is open to those who have passed Course 1.
2. Science of Rhetoric. Essays. *Tu, Th*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor SCOTT.
See note to Course 2 in first semester.
4. Transition English. Text-book: Morris and Skeat's Specimens of Early English, Part I. *Tu, Th*, 2-3. Assistant Professor HEMPL.
Course 4 must be preceded by Course 3.
6. English Literature; Period of Modern English. Text-book: Morley and Tyler's Manual of English Literature, Part IV. *M, W*, Sec. I, 2-3; Sec. II, 3-4. Assistant Professor HEMPL.
Course 6 must be preceded by Course 5.
8. Old English (Anglo-Saxon) Poetry. Text-book: Sweet's Reader. *Two-fifths Course. Hours arranged with instructor*. Assistant Professor HEMPL.
Course 8 must be preceded by Course 3.
10. Seminary. Problems in Higher Rhetoric and Literary Criticism. Reading and discussion of the whole or of parts of standard works in rhetoric and literary criticism. *Two-fifths Course. Hours arranged with instructor*. Assistant Professor SCOTT.
Course 10 is open to students who have passed Course 2 in English and Course 11 in Philosophy, and to such others as receive special permission. It is recommended as an introduction to Course 11.
12. English Literature; Study of Shakespeare. Plays selected: A Midsummer Night's Dream, The Merchant of Venice, As You Like It, Twelfth Night, The Tempest, Richard II, the two parts of Henry IV, Henry V, Richard III, Hamlet, Macbeth, Othello, King Lear, and Coriolanus. *Twice a week (once two hours; once one hour)*. *M*, Sec. I, 4-6; *Tu*, Sec. II, 4-6; *W*, Sec. III, 4-6; *F*, Secs. I, II, and III, 4-5. *Three-fifths Course*. Professor DEMMON.
Course 12 must be preceded by Course 11.
13. History of the English Drama. Lectures. *Th*, 3-4. Professor DEMMON.
Course 13 must be preceded by Courses 5 and 6.
14. American Literature Seminary. Authors studied: Irving, Poe, Hawthorne, Bryant, Longfellow, Emerson, Thoreau, Bayard Taylor, Whittier, Holmes, Lowell, Howells and James. *Th*, 4-6. *Two-fifths Course*. Professor DEMMON.

- Course 14 must be preceded by Course 11. Representative works of the authors above named will be studied and compared with masterpieces of British authors, and an attempt made to discover the distinctively "American" element.
16. The Elements of Phonetics, with especial reference to English. Lectures and drill. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor HEMPL.
17. Early Modern English (Fifteenth Century). *Two-fifths Course. Hours arranged with instructor.* Assistant Professor HEMPL.
- Course 17 must be preceded by Course 3 or Course 5.
18. Rapid Writing. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor SCOTT.
- Course 18 is open only to such as receive special permission.

COURSES IN ELOCUTION AND ORATORY.

In addition to the Courses above announced, the following Courses in Elocution and Oratory, designated as English A, B, C, D, E, F, are given.

FIRST SEMESTER.

- A. Elocution. Exercises in vocal culture, breathing, position and gesture; phonology and pronunciation; elements of quality and force of voice, with their applications. *M, W, Sec. I, 10½-11½; Sec. II, 11½-12½.* Assistant Professor TRUEBLOOD.
- C. Study of Great Orators: Ancient Orators, and Modern Orators of Continental Europe. Lectures on methods of public address and sources of power; study of representative selections. *Tu, Th, 10½-11½.* Assistant Professor TRUEBLOOD.
- Course C must be preceded by Courses A and B.
- E. Shakespearian reading. Critical study and reading of Julius Caesar and Much Ado About Nothing. *Tu, Th, 9½-10½.* Assistant Professor TRUEBLOOD.

Course E must be preceded by Courses A and B.

SECOND SEMESTER.

- B. Elocution. Exercises in vocal culture continued; principles of action, elements of pitch and time, and emphasis, with their applications. *M, W, Sec. I, 10½-11½; Sec. II, 11½-12½.* Assistant Professor TRUEBLOOD.
- Course B must be preceded by Course A.
- D. Study of Great Orators: English and American Orators. *Tu, Th, 9½-10½.* Assistant Professor TRUEBLOOD.
- Course D must be preceded by Courses A, B, and C.
- F. Oral Discussions. Designed to develop readiness of extemporization. *Tu, Th, 10½-11½.* Assistant Professor TRUEBLOOD.
- Course F must be preceded by Course 2 and by Courses A and B.

HISTORY.

FIRST SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F*, Sec. I, 8½-9½; Sec. II, 4-5; Sec. III, 5-6. Dr. McPHERSON.

Course 1 is also given in the second semester, and students are expected to begin their work in History with this Course.

3. Constitutional History of the United States. Lectures and quiz. Lectures, *Tu, Th*, 3-4. Quiz on the lectures and on Von Holst, *F*, Sec. I, 2-3; Sec. II, 3-4; Sec. III, 4-5. *Three-fifths Course*. Assistant Professor McLAUGHLIN.
5. Constitutional Law of the United States. Text-book: Cooley. *Tu, Th*, 9½-10½. Assistant Professor McLAUGHLIN.
7. History of Europe during the Sixteenth and Seventeenth Centuries. Lectures. *Tu, Th*, 8½-9½. Professor HUDSON.
11. Seminary. Constitutional History of the United States since 1845. *M*, Sec. I, 10½-12½, *S*, Sec. II, 9-11. *Two-fifths Course*. Assistant Professor McLAUGHLIN.

Course 11 must be preceded by Courses 3 and 4.

12. Comparative Constitutional Law. Two lectures and one quiz each week. *M, W, F*, 8½-9½. Professor HUDSON.

Course 12 is designed only for advanced students, and must be preceded by at least three Courses in History.

14. History and Institutions of the more ancient nations and of Greece. *Tu, Th, F*, 10½-11½. Dr. McPHERSON.
17. A study of the condition of government, society, and political opinion in France on the eve of the Revolution. Text-book: Taine's *Ancient Régime*. *M, W, F*, 9½-10½. Professor HUDSON.

SECOND SEMESTER.

1. Political and Constitutional History of England. Text-book: Ransome. *M, W, F*, Sec. I, 8½-9½; Sec. II, 4-5. Dr. McPHERSON. See note to Course 1 in first semester.
2. American Colonial History. Lectures and quiz. Lectures, *M, W*, 4-5. Quiz, *once a week*, in sections, at hours arranged with instructor. *Three-fifths Course*. Assistant Professor McLAUGHLIN.
4. Constitutional History of the United States, continuation of Course 3. Lectures and quiz. Lectures, *Tu, Th*, 3-4. Quiz on the lectures and on Von Holst, *F*, Sec. I, 2-3; Sec. II, 3-4, Sec. III, 4-5. *Three-fifths Course*. Assistant Professor McLAUGHLIN.

Course 4 must be preceded by Course 3.

6. History of the Middle Ages. Text-book: Guizot. *Tu, Th, F*, 9½-10½. Dr. McPHERSON.
8. History of the Eighteenth Century. Lectures. *Tu, Th*, 8½-9½. Professor HUDSON.

- [9. History of the French Revolution and of the Empire of Napoleon. Lectures. *Tu, Th*, 8½-9½. Professor HUDSON.
Course 9 is not given in 1890-91.]
10. History of Europe since the Congress of Vienna. Lectures and quiz. Lectures, *M, W*, 8½-9½. Quiz, *F*, Sec. I, 8½-9½, Sec. II, *at an hour arranged with instructor*. Professor HUDSON.
13. Seminary. Comparative Constitutional Law. *F*, 9½-11½. *Two-fifths Course*. Professor HUDSON.
Course 13 must be preceded by Course 12, and is open only to students who show special proficiency in historical work.
15. Roman History and Institutions. *Tu, Th, F*, 10½-11½. Dr. MCPHERSON.
16. Advanced Constitutional History of England. Lectures and Text-book. Text-book: Constitutional Essays. *M, W*, 3-4. Assistant Professor McLAUGHLIN.
18. History of the Consulate and Empire of Napoleon. Text-book: Taine's *New Régime*. *M, W*, 9½-10½. Professor HUDSON.

PHILOSOPHY.

A student intending to take all the work offered in Philosophy should take the Courses in about the order of their numbers, beginning with Course 1 in the second year of residence at the University. To students not intending to make a specialty of Philosophy, it is a matter of indifference whether Courses 3, 4, 5, and 7 are taken in their third or fourth year.

FIRST SEMESTER.

2. General Psychology. Text-book: Dewey's Psychology. *M, W, F*, Sec. I, 9½-10½. Professor DEWEY. *M, W, F*, Sec. II, 9½-10½; *Tu, Th, F*, Sec. III, 8½-9½. Mr. TUFTS.
- 2a. Physiological Psychology. Lectures and laboratory work. Lectures, *M*, 4-5, *F*, 11½-12½; laboratory work, *Tu*, *afternoon*; *S*, *forenoon*. *Two-fifths Course*. Mr. TUFTS.
Course 2a must be preceded or accompanied by Course 2.
- 2b. Advanced Psychology. *W*, 4-5. Professor DEWEY.
Course 2b is open to graduate students only.
3. History of Ancient and Mediæval Philosophy. Lectures with study of portions of Plato and Aristotle. *M, W, F*, 10½-11½. Mr. TUFTS.
8. Political Philosophy; or, the Ethics of Social Relations. Lectures. *Tu, Th*, 11½-12½. Professor DEWEY.
Course 8 must be preceded by Course 7.
9. Kant's Critique of Pure Reason, Mahaffy and Bernard's edition, with lectures. *Tu, Th*, 10½-11½. Professor DEWEY.
Course 9 must be preceded by Courses 4 and 5.

9a. Caird's Critical Philosophy of Kant. *One-fifth Course. Hour arranged with instructor.* Professor DEWEY.

Course 9a is open to graduate students, and to advanced undergraduate students, who have taken or are taking Course 9.

10. Advanced Logic: The Theory of Scientific Method. Lectures. *M, W, 11½-12½.* Professor DEWEY.

Course 10 must be preceded by Courses 2 and 5.

11. *Æsthetics*; or, The Philosophy of the Beautiful in Nature, and in the Products of Human Art. Lectures. *Tu, Th, 9½-10½.* Assistant Professor SCOTT.

Course 11 must be preceded by Courses 2 and 5.

SECOND SEMESTER.

1. Logic. This Course may be elected as

1a. Elementary Logic. Text-book: Jevons's Lessons. *Tu, Th, Sec. I, 9½-10½; W, F, Sec. II, 8½-9½; Sec. III, 9½-10½;*

or 1b. Inductive Logic. Text-book: Fowler's Inductive Logic. *Tu, Th, 8½-9½.* Mr. TUFTS.

Course 1a or 1b will meet the requirements for a degree, but credit will not be given for both 1a and 1b. Course 1b is advised especially for students in scientific lines.

4. History of Modern Philosophy. Lectures, with readings from Descartes, Locke, Berkeley, Hume, and Kant. *M, W, F, 10½-11½.* Mr. TUFTS.

Course 4 should be preceded by Course 3.

4a. Masterpieces of Modern Philosophy. Subject for 1890-91: Hegel's Philosophy of Spirit. *M, 11½-12½.* Professor DEWEY.

5. Introduction to Philosophy. Lectures. *W, F, 11½-12½.* Professor DEWEY.

Course 5 must be preceded by Course 2.

7. Ethics. Lectures. *Tu, Th, 10½-11½.* Professor DEWEY.

Course 7 must be preceded by Course 2.

12. Hegel's Logic, Wallace's translation, with reports and lectures. *Tu, Th, 9½-10½.* Professor DEWEY.

Course 12 must be preceded either by Course 9 or by Course 10. Both are advised.

13. Seminary. Ethical Problems. *Two-fifths Course. Hours arranged with instructor.* Professor DEWEY.

Course 13 must be preceded by Courses 7 and 8.

14. Seminary. Studies in the History and Philosophy of Religion. *Two-fifths Course. Hours arranged with instructor.* Mr. TUFTS.

Course 14 must be preceded by one of the three Courses, 4, 5, 7.

15. Conferences in *Æsthetics*. *One-fifth Course. Hour arranged with instructors.* Assistant Professor SCOTT and Professor DEWEY.

Course 15 is designed for graduate students.

THE SCIENCE AND THE ART OF TEACHING.

Students who wish to prepare themselves for ordinary class-room duties are advised to pursue Course 1, if they can take but one; those who propose to assume the management of high schools, or graded schools, should take Course 5 in connection with Course 1. In both cases, however, it is desirable for them to pursue Course 2. The order in which Courses 1 and 2 are taken is not material. Students are recommended to take Course 1 or Course 2 before the historical Courses. A course of reading is prescribed in connection with Courses 1 and 2.

FIRST SEMESTER.

1. Practical: the arts of teaching and governing; methods of instruction and general school-room practice; school hygiene; school law. Recitations and lectures. Text-book: Compayré's Lectures on Pedagogy. *Tu, W, Th, F, 2-3.* Professor HINSDALE.
3. History of Education: ancient and mediæval. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th, 5-6.* Professor HINSDALE.
5. School Supervision: embracing general school management, the art of grading and arranging courses of study, the conduct of institutes, etc. Recitations and lectures. Text-book: Payne's Chapters on School Supervision. *M, W, F, 8½-9½.* Professor HINSDALE.

SECOND SEMESTER.

2. Theoretical and critical: the principles underlying the arts of teaching and governing. Lectures. *Tu, W, Th, F, 2-3.* Professor HINSDALE.
4. History of Education: modern. Recitations and lectures. Text-book: Compayré's History of Pedagogy. *Tu, W, Th, 5-6.* Professor HINSDALE.
6. The comparative study of educational systems, domestic and foreign. Lectures. *Tu, Th, 8½-9½.* Professor HINSDALE.
7. Seminary. Study and Discussion of special topics in the History and Philosophy of Education. *M, W, 8½-9½.* Professor HINSDALE.

POLITICAL ECONOMY.

FIRST SEMESTER.

1. Principles of Political Economy. Text-book: Walker (Advanced Course). *M, W, F, Sec. I, 11½-12½; Sec. II, 2-3. M, Th, F, Sec. III, 3-4.* Professor F. M. TAYLOR.
3. Principles of the Science of Finance. Lectures and recitations. Text-book: Adams's Public Debts. *Tu, Th, 11½-12½.* Professor F. M. TAYLOR.

Course 3 must be preceded by Course 1.

9. Seminary in Economics. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor F. M. TAYLOR.

Course 9 is designed for candidates for advanced degrees.

SECOND SEMESTER.

2. Unsettled Questions in Political Economy. Lectures. *M, W, F*, 2-3. Professor ADAMS, Mr. WRIGHT, and Dr. SELIGMAN.

Course 2 must be preceded by Course 1. Professor Adams lectures on Commercial Crises, on the Railroad Problem, and on Immigration; Mr. Wright on Studies in Statistics; and Dr. Seligman on the History of Economic Doctrine.

4. Social and Industrial Reforms. Lectures, embracing a discussion of the development of industrial classes, poor-law legislation, criminal legislation, the labor problem, and socialism. *Tu, Th*, 11½-12½. Professor ADAMS.

Course 4 must be preceded by Course 1.

5. History of Economic Thought. Text-book: Ingram's History of Political Economy; with assigned readings. *Tu*, 11½-12½. Professor ADAMS.

Course 5 must be preceded by Course 1, and by either Course 2 or Course 4.

10. Seminary in the Science of Finance. *Tu*, 7-9 P. M. *Two-fifths Course*. Professor ADAMS.

Course 10 is designed for students who have taken Courses 1 and 2.

12. The Commercial Relations of the United States. Lectures, embracing a discussion of the development of foreign commerce, of tariff, and of reciprocity. *Tu, Th*, 4-5. Dr. HICKS.

Course 12 must be preceded by Course 1.

- 12a. Seminary. History of Industries. *M*, 2-5. *Two-fifths Course*. Dr. HICKS.

Course 12a must be preceded by Courses 1 and 2.

INTERNATIONAL LAW.

FIRST SEMESTER.

1. Lectures on International Law. *Tu, Th*, 2-3. President ANGELL.
Course 1 is open only to those who have completed two Courses in History; Course 7 is especially recommended as one of the two.

SECOND SEMESTER.

2. History of Treaties. *Tu, Th*, 2-3. President ANGELL.
Course 2 must be preceded by Course 1.

MUSIC.

The Courses in Music, 1 to 8, taken in the regular order of the numbers, represent four years' work. They are open to students who evince sufficient musical ability to pursue them with profit, and must be taken

in the order indicated. No previous knowledge of music is required for admission to Course 1, but those who wish to take the Course must first satisfy the instructor that they can do so to advantage. Students properly qualified may be admitted on examination to the advanced Courses, and may, if they desire, pursue the study of Instrumentation and Composition.

Courses 13 and 14 are open only to such candidates for a degree as evince decided musical ability. They must be prepared to enter Course 5, and they must be able satisfactorily to interpret music of the difficulty of Beethoven's Sonata, Op. 26 (Piano), or Mendelssohn's C-minor Sonata (Organ). Advanced theoretical study will be required in connection with these Courses. These Courses are open only to students who are candidates for some degree, except by special permission of the Faculty.

FIRST SEMESTER.

1. Science and Practice of Choral Music. *Tu, Th*, 5-6. Professor STANLEY.

3. Science of Harmony. *Tu, F*, Sec. I, 9½-10½; Sec. II, 10½-11½; Sec. III, 11½-12½. Professor STANLEY.

Course 3 must be preceded by Course 2, and sufficient technical ability to play a common hymn tune on the piano or organ is also required.

5. Simple Counterpoint. *M, Th*, 9½-10½. Professor STANLEY.

7. Imitation. Canon. Choral Vorspiel. *Hours and credit arranged with instructor.* Professor STANLEY.

9. The History of Music. Lectures. *W, F*, 5-6. Professor STANLEY.
Course 9 is open to students who have taken or are taking Course 1, and to such others as receive special permission.

11. Critical Analysis of Musical Forms. Lectures. *Two-fifths Course.* *Hours arranged with instructor.* Professor STANLEY.

13. Advanced Piano-forte or Organ Playing. *Hours and credit arranged with instructor.* Professor STANLEY.

SECOND SEMESTER.

2. Science and Practice of Choral Music, continuation of Course 1. *Tu, Th*, 5-6. Professor STANLEY.

4. Science of Harmony, continuation of Course 3. *Tu, F*, Sec. I, 9½-10½; Sec. II, 10½-11½; Sec. III, 11½-12½. Professor STANLEY.

6. Double Counterpoint. *M, Th*, 9½-10½. Professor STANLEY.

8. Fugue. Musical Form. *Hours and credit arranged with instructor.* Professor STANLEY.

10. Continuation of Course 9. Lectures. *W, F*, 5-6. Professor STANLEY.

12. Musical Æsthetics. Principles of Musical Criticism. Lectures. *Two-fifths Course.* *Hours arranged with instructor.* Professor STANLEY.

14. Advanced Piano-forte or Organ Playing. *Hours and credit arranged with instructor.* Professor STANLEY.

BIBLIOGRAPHY.

FIRST SEMESTER.

During the month of October Professor R. C. DAVIS gives on Monday evenings, from 7 to 8, a course of lectures designed to aid readers in the use of the library, and in gaining a knowledge of recent books. These lectures do not count toward a degree.

SECOND SEMESTER.

1. Historical, Material, and Intellectual Bibliography. Lectures. W, 3-4. Professor R. C. Davis.

MATHEMATICS.

Students in Engineering are required to take in order Courses 1, 2, 3, 4, 5, 6 (except that Course 5 is not required of students in Electrical Engineering, and except further, that the requirements for students in Metallurgy are Courses 1a and 2a). They are also required to take Course 1b, unless they have passed a satisfactory examination for admission in Plane Trigonometry. No credit toward graduation is given to engineering students for Course 1b.

Other students may take in order Courses 1a, 2a, 3a, 4a. Of these, Course 1a is required for the degree of B. L.; 1a and 2a are required for the degrees of A. B., PH. B., and B. S. Students who desire to give more time to mathematics may substitute Courses 1, 1b, 2 for the shorter Courses 1a, 2a, and Courses 3, 4 for the shorter Courses 3a, 4a.

FIRST SEMESTER.

1. Algebra and Analytic Geometry (I). *M, Tu, W, Th*, Secs. I and II, 4-5; Secs. III and IV, 5-6. Mr. HUSSEY, Dr. MARKLEY, and Mr. LYMAN.
- 1a. Plane Trigonometry and Algebra. *Tu, W, F*, Secs. I, II, and III, 8½-9½; *M, Tu, F*, Secs. IV and V, 9½-10½; *M, W, Th*, Secs. VI and VII, 10½-11½; *W, Th, F*, Secs. VIII and IX, 11½-12½. *Three-fifths Course.* Assistant Professor ZIWET, Mr. HUSSEY, Dr. MARKLEY, and Mr. LYMAN.
- 1b. Plane Trigonometry. *Tu, Th*, Sec. I, 2-3; Sec. II, 3-4. Dr. MARKLEY.
3. Differential and Integral Calculus (I). *M, Tu, W, Th, F*, Secs. I and II, 3-4; Secs. III and IV, 4-5. Assistant Professor COLE, Assistant Professor ZIWET, and Dr. MARKLEY.
- 3a. Calculus (I). *M, Tu, W, Th*, 3-4. Professor BEMAN.
5. Advanced Analytic Geometry and Calculus. *M, Tu, W, Th*, 4-5. Professor BEMAN.
6. Mechanics. *Tu, W, Th, F*, Sec. I, 4-5; Sec. II, 5-6. Assistant Professor ZIWET.

7. Modern Geometry (I). *M, W, F, 11½–12½.* Assistant Professor COLE.
11. Theory of Functions (I). *Two-fifths Course. Hours arranged with instructor.* Assistant Professor COLE.
13. Mathematical Reading. *Hours and credit arranged with instructor.*
Course 13 is designed to give advanced students an opportunity to read standard mathematical works under the direction of the Faculty.

SECOND SEMESTER.

2. Analytic Geometry (II). *M, Tu, W, Th, Secs. I and II, 4–5; Secs. III and IV, 5–6.* Mr. HUSSEY, Dr. MARKLEY, and Mr. LYMAN.
- 2a. Plane Analytic Geometry. *Tu, W, Th, F, Secs. I, II, and III, 8½–9½; M, Tu, Th, F, Secs. IV, V, and VI, 9½–10½; M, Tu, W, Th, Sec. VII, 10½–11½.* Assistant Professor ZIWET, Mr. HUSSEY, Dr. MARKLEY, and Mr. LYMAN.
- 2b. Spherical Trigonometry. *Two-fifths Course. Hours arranged with instructor.* Mr. HUSSEY.
4. Differential and Integral Calculus (II). *M, Tu, W, Th, F, Secs. I and II, 3–4; Secs. III and IV, 4–5.* Assistant Professor COLE, Assistant Professor ZIWET, and Dr. MARKLEY.
- 4a. Calculus (II). *M, Tu, W, Th, 3–4.* Professor BEMAN.
8. Modern Geometry (II). *Two-fifths Course. Hours arranged with instructor.* Assistant Professor COLE.
9. Differential Equations. *Tu, Th, 2–3.* Professor BEMAN.
10. Quaternions. *Tu, W, Th, 4–5.* Professor BEMAN.
12. Modern Higher Algebra. *Three-fifths Course. Hours arranged with instructor.* Dr. MARKLEY.
13. Mathematical Reading. *Hours and credit arranged with instructor.*
See note to Course 13 in first semester.
14. Theory of Functions (II). *Two-fifths Course. Hours arranged with instructor.* Assistant Professor COLE.
15. Advanced Mechanics. *Three-fifths Course. Hours arranged with instructor.* Assistant Professor ZIWET.

PHYSICS.

FIRST SEMESTER.

1. Mechanics, Sound, and Light. *M, Tu, W, Th, F, 11½–12½.* Professor CARHART.
Course 1 is open to those who have passed an entrance examination in Physics, and to all others who have sufficient preparation. A knowledge of Plane Trigonometry is indispensable.
4. Primary and Secondary Batteries. *Lecture, once a week; laboratory work, once a week. Hours arranged with instructors.* Professor CARHART and Mr. PATTERSON.
Course 4 must be preceded by Course 2.

5. Electrical Units and Measurements. This Course may be elected as
 5a. Lectures, *Tu, Th, 2-3*; laboratory work, *three times a week, between 9½ and 12½, or between 2 and 5*;
 or 5b. *Twice a week, between 9½ and 12½, or between 2 and 5.* Professor CARHART and Mr. PATTERSON.

Course 5 must be preceded by Courses 2 and either 3a or 3b; 5a is a prescribed Course for students in Electrical Engineering; 5b is designed to meet the wants of students in Civil, Mechanical, or Mining Engineering who do not have time to take 5a.

6. Physical Laboratory work in Sound and Light. *Three times a week, between 9½ and 12½.* Professor CARHART.

Course 6 must be preceded by Courses 1 and either 3a or 3b.

7. Mathematical Electricity: Mascart and Joubert. *Tu, Th, 8½-9½.* Mr. PATTERSON.

Course 7 must be preceded by Course 2a; a knowledge of Calculus is also required.

SECOND SEMESTER.

2. Electricity, Magnetism, and Heat. In 1890-91 this Course will be given as

2a. Electricity and Magnetism. *M, W, F, 11½-12½*;
 and 2b. Heat. *Tu, Th, 11½-12½.* Professor CARHART.

Course 2 must be preceded by Course 1.

3. Physical Laboratory work for beginners. This Course may be elected as

3a. *Three times a week, between 9½ and 12½, or between 2 and 5*;
 or 3b. *Twice a week, between 9½ and 12½, or between 2 and 5.* Mr. PATTERSON.

Course 3 must be preceded by Course 1.

8. Dynamo-Electric Machinery. This course may be elected as
 8a. Lectures, *Tu, Th, 8½-9½*; laboratory work, *twice a week between 2 and 5*;

or 8b. Lectures, *Tu, Th, 8½-9½*; laboratory work, *once a week, between 2 and 5.* Professor CARHART.

Course 8 must be preceded by Courses 2 and either 5a or 5b.

9. Distribution of Electricity, and Photometry of Electric Lamps. Lectures, *twice a week*; laboratory work, *twice a week. Hours arranged with instructors.* Professor CARHART and Mr. PATTERSON.

Course 9 must be preceded by Course 8a or 8b.

10. Mathematical Electricity: Mascart and Joubert, continuation of Course 7. *M, W, 8½-9½.* Mr. PATTERSON.

Course 10 must be preceded by Course 7.

11. Geometrical Optics. *Two-fifths Course. Hours arranged with instructor.* Professor CARHART.

Course 11 must be preceded by Course 1; a knowledge of Calculus is also required.

GENERAL CHEMISTRY.

FIRST SEMESTER.

2. Laboratory work in General Chemistry. *Three times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

Course 2 must be preceded by Course 1. It is supplementary to Course 1 and covers in the laboratory the ground covered by lectures in Course 1.

3. Laboratory work in General Chemistry. *Five times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

Course 3 must be preceded by Course 1. It may be taken as a Teachers' Course by students who desire to do so.

4. Theoretical Chemistry of Recent Years. Lectures. *Tu, Th, 4-5.* Professor FREER.

Course 4 must be preceded by Courses 1 and either 2 or 3 in General Chemistry, and by Courses 1 and 10 in Analytical and Organic Chemistry. Course 4 in Analytical Chemistry is also recommended.

7. Laboratory Research in General Chemistry. *Hours and credit arranged with instructor.* Professor FREER.

Courses 7 and 7a are limited to three students and are open only to persons who receive special permission from the instructor.

SECOND SEMESTER.

1. General Experimental Chemistry. Lectures, *M, W, F, recitations, Tu, Th, 11½-12½.* Professor FREER.

2. Laboratory work in General Chemistry. *Three times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

See note to Course 2 in first semester.

- 2a. Continuation of Course 2. *Three times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

3. Laboratory work in General Chemistry. *Five times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

- 3a. Continuation of Course 3. *Five times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

5. Gas Analysis. *Three times a week, afternoons, between 2 and 5.* Professor FREER and Mr. McGEE.

Course 5 must be preceded by Courses 1 and either 2 or 3 in General Chemistry, and by Course 1 in Analytical Chemistry. Course 4 in Analytical Chemistry is also recommended.

6. German Chemical Literature. *W, 4-5.* Professor FREER.

Course 6 must be preceded by Course 4.

- 7a. Laboratory Research in General Chemistry. *Hours and credit arranged with instructor.* Professor FREER.

See note to Course 7 in first semester.

ANALYTICAL CHEMISTRY AND ORGANIC CHEMISTRY.

The laboratory work requires from two to three hours daily, taken, in the first semester, between 1 and 5; in the second semester, between 1 and 6. Permission for forenoon hours is given when necessary.

Those entering upon the study of Analytical Chemistry for scientific purpose irrespective of technical application, should first take Courses 1 or 3, and 4, and if possible should reach Course 17. In Organic Chemistry, Course 10, or Courses 10 and 11, should be taken first, and either Course 12 or Course 14 may be taken next. In Synthetic Research, Courses 10, 11, 12, 13, and 17 may be taken. For Commercial Analysis, Courses 10, 11, and 14 should be taken. For Metallurgical Analysis, Courses 1, 4, 5, 6, 7, and 9 are required. For Manufacturing Chemistry, Courses 1, 2, 4, 5, 10, 11, 14, 15, and 16, are advised. In preparation for Physiological Chemistry, Courses 1, 4, and 10 are recommended.

FIRST SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F*, Sec I, 8½–9½; Sec. II, 9½–10½; laboratory work, *daily*. *Ten-fifths Course.* Professor JOHNSON.
10. Organic Chemistry. Lectures and recitations. *M, Tu, W, Th, F*, 10½–11½. Professor PRESCOTT.
Course 10 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry, or Course 1 in General Chemistry.
- [15. Outlines of Chemical Technology. Lectures. *One-fifth Course.* Professor JOHNSON.
Course 15 is open to those who have taken Course 1 or Course 3. It is not given in 1890–91.]

EITHER FIRST OR SECOND SEMESTER.

4. Quantitative Analysis. Recitations, *Tu, Th*, 11½–12½; laboratory work, *five times a week*. *Seven-fifths Course.* Assistant Professor E. D. CAMPBELL.
Course 4 is open to those who have taken Course 1 or Course 3.
5. Advanced Quantitative Analysis. Laboratory work, *daily*. *Five-fifths Course.* Assistant Professor E. D. CAMPBELL.
Course 5 is open to those who have taken Course 4.
6. Iron and Steel Analysis. Laboratory work, *daily*. *Five-fifths Course.* Assistant Professor E. D. CAMPBELL.
Course 6 is open to those who have taken Course 4.
7. Iron and Steel Analysis, continuation of Course 6. Laboratory work, *daily*. *Five-fifths Course.* Assistant Professor E. D. CAMPBELL.

8. Blow-pipe Analysis. Laboratory work. *Two-fifths Course*. Assistant Professor E. D. CAMPBELL.
9. Assaying Ores, dry way. Laboratory work. *Two-fifths Course*. Assistant Professor E. D. CAMPBELL.
11. Organic Chemistry. Laboratory work. *Two-fifths Course*. Professor PRESCOTT.

Course 11 is open to those who have taken Course 1 or Course 3. It must also be preceded or accompanied by Course 10.

12. Organic Chemistry. Ultimate Analysis and Synthetic Preparations. Laboratory work. *Five-fifths Course*. Professor PRESCOTT.
- Course 12 is open to those who have taken Courses 1, 4, and 10.
13. Organic Chemistry, continuation of Course 12. *Five-fifths Course*. Professor PRESCOTT.

17. Original Investigation. Laboratory work and reading. *Five-fifths Course*.
 18. Original Investigation, continuation of Course 17. *Five-fifths Course*.
- Courses 17 and 18 are conducted by different instructors, according to the nature of the investigation. They must be preceded by Courses 1 and 4, and by such other studies as the investigation shall require.

SECOND SEMESTER.

1. Qualitative Analysis. Recitations, *M, Tu, W, Th, F*, 8½-9½; laboratory work, *daily*. *Ten-fifths Course*. Professor JOHNSON.
 2. Advanced Qualitative Analysis, continuation of Course 1, with original work. Recitations, *W, F*, 9½-10½; laboratory work, *three times a week*. *Five-fifths Course*. Professor JOHNSON.
 3. Qualitative Analysis. Recitations, *Tu, Th*, 9½-10½; laboratory work, *three times a week*. *Five-fifths Course*. Professor JOHNSON.
- Courses 3 is a short Course, designed for students in Civil and in Mechanical Engineering.
14. Organic Analysis. Lectures, *W, F*, 10½-11½; laboratory work, *three times a week*. *Five-fifths Course*. Professor PRESCOTT.
 - Course 14 is open to those who have taken Courses 1 or 3, and 4 or 10.
 16. Manufacture and Purification of Chemicals. Laboratory work. *Four-fifths Course*. Professor JOHNSON.
 - Course 16 is open to those who have completed Courses 1 and 2.
 19. Organic Synthesis. Seminary work, *Tu, Th*, 10½-11½; laboratory work, *once a week*. *Three-fifths Course*. Professor PRESCOTT.
 - Course 19 must be preceded by Course 10 and be preceded or accompanied by Course 11.
 20. Photography, including Photomicrography. Laboratory work. *Two-fifths Course*. Mr. STEVENS.
 - Course 20 must be preceded by Course 1 or Course 3, and by some additional Course in Chemistry or a Course in Physics.

HYGIENE AND PHYSIOLOGICAL CHEMISTRY.

FIRST SEMESTER.

- 1 Sanitary Science. Lectures. *Tu, Th, 10½-11½*. Professor VAUGHAN.

EITHER FIRST OR SECOND SEMESTER.

2. Physiological Chemistry. Lectures, *twice a week*; laboratory work, *daily*. *Seven-fifths Course*. Dr. NOVY.

Course 2 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.

3. Physiological Chemistry, continuation of Course 2 and of the same extent. Dr. NOVY.

4. Sanitary Examinations. Lectures, *twice a week*; laboratory work, *daily*. *Seven-fifths Course*. Dr. NOVY.

Course 4 is open to those who have taken Course 1 or Course 3 in Analytical Chemistry.

5. Sanitary Examinations, continuation of Course 4 and of the same extent. Dr. NOVY.

6. Original Research on the Causation of Disease, including a Course in Bacteriology. Laboratory work and reading. *Five-fifths Course*. Professor VAUGHAN.

Course 6 is designed for advanced students, and is open only to such as receive special permission.

7. Original Research on the Causation of Disease, continuation of Course 6 and of the same extent. Professor VAUGHAN.

ASTRONOMY.

FIRST SEMESTER.

3. Modern Meteorology. *Tu, F, 5-6*. Professor HARRINGTON.

Course 3 requires an acquaintance with Physics.

5. Method of Least Squares and Empirical Curves. *W, F, 10½-11½*. Mr. W. W. CAMPBELL.

Course 5 requires a knowledge of the Integral Calculus.

6. Theoretical Astronomy. *M, Tu, W, Th, F, 4-5*. Professor HARRINGTON.

Course 6 should be preceded by Course 6 in Mathematics.

10. History of Astronomy. *M, Th, 5-6*. Professor HARRINGTON.

Course 10 requires a knowledge of Conics and the Elements of Physics.

EITHER FIRST OR SECOND SEMESTER.

2. Elementary Practical Course. *One-fifth Course*. *Hour arranged with instructor*. Mr. W. W. CAMPBELL.

Course 2 requires a knowledge of Trigonometry and General Astronomy.

4. Spherical and Practical Astronomy. *Two-fifths Course. Hours arranged with instructor.* Mr. W. W. CAMPBELL.

Course 4 requires a knowledge of Differential and Integral Calculus and of Solid Analytic Geometry.

9. Advanced Practical Course. *Hours and credit arranged with instructor.* Mr. W. W. CAMPBELL.

Course 9 is open only to such students as receive special permission from the instructor.

SECOND SEMESTER.

- 1b. General Astronomy, Stellar Astronomy. *M, W, F, 4-5.* Professor HARRINGTON.

Course 1b requires a knowledge of Conics.

7. Theoretical Astronomy. *M, Tu, W, Th, F, 5-6.* Professor HARRINGTON.

Course 7 should be preceded by Course 6 in Mathematics.

8. Eclipses, the Calendar, and the elements of Chronology. *W, F, 10½-11½.* Mr. W. W. CAMPBELL.

Course 8 requires a knowledge of Trigonometry and General Astronomy.

11. Mathematical Theories of Planetary Motions. *Tu, Th, 4-5.* Professor HARRINGTON.

Course 11 should be preceded by Course 6 in Mathematics.

MINERALOGY.

FIRST SEMESTER.

1. Short Course. Lectures and practice. Lectures, *M, F, Sec. I, 9½-10½; Sec. II, 10½-11½; Sec. III, 11½-12½.* Practice, *once a week, at hour arranged with instructor.* *Two-fifths Course.* Professor PETTEE.
For Course 1 an elementary knowledge of Chemistry is desirable.

SECOND SEMESTER.

2. Mineralogy and Lithology. Lectures and practice. Lectures, *M, Tu, W, Th, F, 8½-9½.* Practice, *daily at hours arranged with instructor.* *Five-fifths Course.* Professor PETTEE.

Course 2 is open only to those who are taking, or have taken, a Course in Analytical Chemistry.

3. Advanced Course. *Hours and credit arranged with instructor.* Professor PETTEE.

Course 3 must be preceded by Course 1, or by Course 2.

GEOLOGY.

Course 3 or Course 5 may be taken as an advanced Course by students who have passed an entrance examination in Geology.

FIRST SEMESTER.

1. Elements of General Geology. The Earth's surface and the constitution of its crust. Erosion, sedimentation, change of level, mountain-making, geological dynamics, the history of life and the grand succession of geological events. Part I. Facts and Doctrines. *M, W, 3-4.* Professor WINCHELL.

See note to Course 2.

2. Oral Exercises. Supplementary to Course 1, and parallel with it; being a review with exercises on the geological map, and in various specific geological problems. *F, 3-4.* Professor WINCHELL.

Course 2 is intended to accompany Course 1; it may be taken, however, by any person already acquainted with the elements of Geology. Beginners in Geology must take both Courses. Students reviewing the subject by taking either Course 1 or Course 2 without the other, are held to the same examinations as those taking both Courses together.

3. Advanced Geology and Palæontology. Lectures, reading, and museum study. *Tu, Th, 3-4.* Professor WINCHELL.

Course 3 is designed for students who have taken Courses 1 and 2, or who entered the University with thorough preparation in the elements of Geology.

4. Palæontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week, 2-4.* Professor WINCHELL.

Courses 4 and 7 are designed for students aspiring to proficiency in Geology; they must be preceded by Courses 1 and 2 in Geology and also by Courses 1 and 2 in Zoölogy.

8. Economic Geology. *Tu, Th, 5-6.* Professor PETTEE.

Course 8 must be preceded by Course 2 in Mineralogy.

9. Geology of the United States. *Tu, Th, 4-5.* Professor PETTEE.

Course 9 is designed especially to meet the wants of students in Engineering.

SECOND SEMESTER.*

5. Elements of General Geology. Part II. Theories. *M, 3-4.* Professor WINCHELL.

Course 5 can be taken only by those who have had Courses 1 and 2, or an equivalent. See note to Course 6.

6. Oral exercises, parallel with Course 5. *F, 3-4.* Professor WINCHELL.

Course 6 is intended to accompany Course 5. Students taking either Course 5 or Course 6 without the other are held to the same examinations as those taking both Courses together.

*The death of Professor Winchell which occurred February 19, 1891, will make a readjustment of the work in Geology for the second semester necessary.

7. Paleontological Investigations. Laboratory work, with reading, and such instruction as the student may require. *Three, or five, times a week, 2-4.* Professor WINCHELL.
See note to Course 4 in first semester.
9. Geology of the United States. *Tu, Th, 3-4.* Professor PETTEE.
See note to Course 9 in first semester.
10. Teachers' Course in the Elements of Geology. *Tu, Th, 3-4.* Professor WINCHELL.
Course 10 is not given unless elected by at least twelve persons.

GENERAL BIOLOGY.

FIRST SEMESTER.

1. Elements of Biology. A study of typical species of plants and animals, with reference to structure, development, and relationship. Lectures, *M, W, 8½-9½*; laboratory work in the zoölogical laboratory, *forenoons*; in the botanical laboratory, *afternoons.* *Five-fifths Course.* Professor SPALDING and Assistant Professor REIGHARD.

SECOND SEMESTER.

2. Elements of Biology, continuation of Course 1. Lectures, *M, W, 8½-9½*; laboratory work in the zoölogical laboratory, *forenoons*; in the botanical laboratory, *afternoons.* *Five-fifths Course.* Professor SPALDING and Assistant Professor REIGHARD.

Course 2 must be preceded by Course 1.

ZOOLOGY.

I. GENERAL ZOOLOGY.

FIRST SEMESTER.

1. Systematic Zoölogy (Vertebrates). Lectures and recitations. Text-book, Claus and Sedgwick. *M, Tu, W, Th, F, 8½-9½.* Professor STEERE.
4. Original or Independent Work in Systematic Study of Vertebrates. This Course may be elected as *4a, two-fifths Course*; *4b, three-fifths Course*; or, *4c, five-fifths Course.* *Hours arranged with instructor.* Professor STEERE.

Course 4 must be preceded by Courses 1 and 3.

5. Special Study of Invertebrate Groups. Laboratory work and reading with such instruction as the student may require. This Course may be elected as *5a, Conchology, three-fifths Course*; *5b, Study of Corals, three-fifths Course*; or *5c, Entomology, three-fifths Course.* *Hours arranged with instructor.* Professor STEERE.

Course 5 must be preceded by Course 2.

SECOND SEMESTER.

2. Systematic Zoölogy (Invertebrates). Lectures and recitations. Text-book: Claus and Sedgwick. *M, Tu, W, Th, F, 8½-9½.* Professor STEERE.

3. Identification of Vertebrates. Lectures and laboratory work. Lectures, *Tu, Th, 9½-10½*; laboratory work, *forenoons. Five-fifths Course*. Professor STEERE.

Course 3 must be preceded by Course 1.

4. See Course 4 in first semester.

5. See Course 5 in first semester.

II. ANIMAL MORPHOLOGY.

In addition to the Courses in General Zoölogy, the following Courses in Animal Morphology, designated as Zoölogy A, B, C, etc., are given. Courses A and B may accompany Courses 1 and 2 in General Biology. The other Courses must all be preceded by Courses 1 and 2 in General Biology. The Courses should be taken in the regular order of the letters A, B, C, D, E. Course C is not given in 1890-91.

FIRST SEMESTER.

- A. Structure and Development of Animal Types not included* in the Courses in General Biology. Lectures and laboratory work, Lectures, *F, 9½-10½*; laboratory work, *forenoons. Three-fifths Course*. Assistant Professor REIGHARD.

Course A is parallel with and supplementary to Course 1 in General Biology.

- D. Comparative Vertebrate Anatomy. Lectures and recitations, *Tu, Th, 8½-9½*; laboratory work, *forenoons. Five-fifths Course*. Assistant Professor REIGHARD.

- F. Original work in Animal Morphology. This Course may be elected as F1, *two-fifths Course*; F2, *three-fifths Course*; or F3, *five-fifths Course*. Hours arranged with instructor. Assistant Professor REIGHARD.

SECOND SEMESTER.

- B. Structure and Development of Animal Types not included in the Courses in General Biology. Lectures and laboratory work. Lectures, *F, 9½-10½*; laboratory work, *forenoons. Three-fifths Course*. Assistant Professor REIGHARD.

Course B is parallel with and supplementary to Course 2 in General Biology.

- E. Vertebrate and Comparative Embryology. Lectures and laboratory work (embryology of chick and rabbit). Lectures, *Tu, Th, 8½-9½*; laboratory work, *forenoons. Five-fifths Course*. Assistant Professor REIGHARD.

Course E must be preceded by Course C or Course D.

- G. Original work in Animal Morphology. This Course may be elected as G1, *two-fifths Course*; G2, *three-fifths Course*; or G3, *five-fifths Course*. Hours arranged with instructor. Assistant Professor REIGHARD.

BOTANY.

Courses 1 and 2 in General Biology must precede all the Courses in Botany, except Courses 1 and 2 which may be pursued at the same time with the parallel Courses in General Biology.

FIRST SEMESTER.

1. A Study of the Structure and Development of Typical Species of Plants. Lectures and laboratory work. Lecture, *F*, 8½-9½; laboratory work, *afternoons*. *Three-fifths Course*. Mr. NEWCOMBE.
Course 1 is parallel with Course 1 in General Biology.
- [3. Comparative Anatomy and Histology of Plants. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
Course 3 is not given in 1890-91.]
5. Cryptogamic Botany. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
7. Morphology and Physiology of Cryptogams. Investigations. This Course may be elected as 7a, *two-fifths Course*; 7b, *three-fifths Course*; or 7c, *five-fifths Course*. *Hours arranged with instructor*. Professor SPALDING.

SECOND SEMESTER.

2. Continuation of Course 1. Lectures and laboratory work. Lecture, *F*, 8½-9½; laboratory work, *afternoons*. *Three-fifths Course*. Mr. NEWCOMBE.
Course 2 is parallel with Course 2 in General Biology.
- [4. Physiology of Plants. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
Course 4 is not given in 1890-91.]
6. Cryptogamic Botany. Study of Fungi with reference to Vegetable Pathology. Lectures and laboratory work. Lectures, *hours arranged with instructor*; laboratory work, *afternoons*. *Five-fifths Course*. Professor SPALDING.
8. Morphology and Physiology of Phanerogams. Investigations. This Course may be elected as 8a, *two-fifths Course*; 8b, *three-fifths Course*; or 8c, *five-fifths Course*. *Hours arranged with instructor*. Professor SPALDING.
9. Teachers' Course. *M, F*, 5-6. Professor SPALDING.

PHYSIOLOGY.

The Courses in Physiology are designed especially for those who expect to teach the subject. In the lectures great emphasis is laid upon

methods of demonstration. In the laboratory work the student is required to dissect some mammal, to learn the use of physiological apparatus, and to prepare and give demonstrations.

FIRST SEMESTER.

1. Lectures. *Two-fifths Course. Hours arranged with instructor, forenoons.*
Professor HOWELL.

SECOND SEMESTER.

2. Laboratory work. *Two-fifths Course. Hours arranged with instructor, afternoons.* Professor HOWELL.

Course 2 must be preceded by Course 1. The class is limited to sixteen members.

DRAWING.

In Courses 2, 4, 7, 8, and 9, attendance in the drawing room on the days indicated is required for *one hour* in addition to the hour specified.

FIRST SEMESTER.

1. Geometrical Drawing. *M, W, Sec. I, 2-4.* Assistant Professor J. B. DAVIS. *W, F, Sec. II, 10½-12½; Tu, Th, Sec. III, 9½-11½; M, W, F, Sec. IV, 2-4.* Mr. MORLEY.

Sec. IV covers the last two-thirds of the semester and is intended for students in Mechanical Engineering who have taken Course 4 in Surveying in the first third of the semester.

2. Topographical Drawing and Lettering. *Tu, Th, 9½-10½ or 10½-11½.*
Professor DENISON.

3. Mechanical Drawing. *Tu, Th, F, 2-4.* Assistant Professor J. B. DAVIS.

4. Free-hand Drawing; Sketching; Pen and Ink Drawing. *M, W, F, 9½-10½, 10½-11½, or 11½-12½.* Professor DENISON or Miss HUNT.

9. Sketching of parts of machines. Lettering. *M, W, F, 10½-11½.*
Professor DENISON.

Course 9 is designed especially for students in Mechanical Engineering.

10. Continuation of Course 8. *Two-fifths Course. Hours arranged with instructor.* Professor DENISON or Miss HUNT.

13. Water-Color Drawing. *Three-fifths Course. Hours arranged with instructor.* Professor DENISON or Miss HUNT.

Course 13 must be preceded by Course 8.

SECOND SEMESTER.

5. Descriptive Geometry. Recitations and drawing. *Three-fifths Course.*
Recitations, *M, Sec. I, 8½-9½; Tu, Sec. I 9½-10½; Sec. II, 8½-9½; W, Sec. II, 10½-11½.* Assistant Professor J. B. DAVIS. *W, Sec. III, 8½-9½; Sec. V, 9½-10½; Th, Sec. V, 8½-9½; Sec. III, 9½-10½; Sec. IV, 10½-11½; F, Sec. IV, 8½-9½.* Mr. MORLEY. Drawing, *M, Sec. II, 9½-11½; W, Sec. I, 8½-10½.* Assistant Professor J. B. DAVIS. *Tu, Sec. V, 8½-10½; W, Sec. IV, 10½-12½; F, Sec. III, 9½-11½.* Mr. MORLEY.

Course 5 must be preceded by Course 1.

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6. Shades, Shadows, and Perspective. *M, W, F, 9½–10½, and such additional time as may be found necessary to complete the work. Three-fifths Course.* Professor DENISON.
Course 6 must be preceded by Course 5.
7. Free-hand Drawing (advanced). *M, W, F, 10½–11½ or 11½–12½.* Professor DENISON or Miss HUNT.
8. Architectural and Water-color Drawing. *Tu, Th, 10½–11½ or 11½–12½.* Professor DENISON or Miss HUNT.
Course 8 must be preceded by Courses 1 and 4.
14. Stereotomy. *Tu, Th, 9½–10½, and such additional time as may be found necessary to complete the work. Two-fifths Course.* Professor DENISON.
Course 14 must be preceded by Course 5.

SURVEYING.

FIRST SEMESTER.

1. Surveying: Compass; Transit; Level; Solar Compass; U. S. Surveys. Lectures and practice with instruments in the field. Lectures, *M, Tu, W, Th, F, 8½–9½; practice, 9½–12½. Five-fifths Course.* Assistant Professor J. B. DAVIS.
The field practice in Course 1 is designed to occupy all the forenoons, when the weather is suitable, during the months of October, November, and December.
4. Use of Instruments. *M, W, F, for the first third of the semester. One-fifth Course.* Mr. MORLEY.
Course 4 is designed especially for students in Mechanical Engineering.

SECOND SEMESTER.

2. Higher Surveying: Plane Table; Sextant; Earth-work. *M, Tu, W, Th, F, 2–6. Five-fifths Course.* Assistant Professor J. B. DAVIS.
Course 2 must be preceded by Course 1.
3. Field work. *Four weeks entire, 8–12 and 1–5.* Assistant Professor J. B. DAVIS.
Course 3 is open only to students that are, or are intending to become, candidates for a degree in Engineering.

CIVIL ENGINEERING.

FIRST SEMESTER.

1. Principles of Mechanism; Drawing. *Tu, Th, 9½–11½.* Professor DENISON.
4. Graphical Analysis of Structures. *Tu, Th, 9½–10½.* Professor GREENE.
Course 4 must be preceded by Course 3.
5. Strength and Resistance of Materials. *M, W, 9½–10½.* Professor GREENE.
Course 5 must be preceded by Course 6 in Mathematics.

6. Engineering; Theory of Construction. *F*, 9½–10½. Professor GREENE.
Course 6 must be preceded by Course 6 in Mathematics.
7. Engineering Design. *M, Tu, W, Th, F*, 2–5. *Five-fifths Course*. Professor GREENE.

SECOND SEMESTER.

Course 7 accompanies Courses 5 and 6.

2. Dynamics of Machinery. *First half of semester. M, W*, 8½–9½. *One-fifth Course*. Professor COOLEY.

Course 2 is the same as the first half of Course 7 in Mechanical Engineering.

3. Graphical Analysis of Structures. *Tu, Th*, 10½–11½. Professor GREENE.

Course 3 requires at least a limited knowledge of Statics.

8. Engineering; Theory of Construction. *M, Tu, Th, F*, 9½–10½. Professor GREENE.
9. Hydraulics; Water Supply and Sewerage. *W*, 9½–10½. Professor GREENE.

MECHANICAL ENGINEERING.

In the Courses in Shop Practice, Assistant Professor C. G. TAYLOR is aided in the iron work by Mr. Smoots, in the foundry work by Mr. Winslow, in the wood work by Mr. Purfield, and in the forge shop by Mr. Orr.

FIRST SEMESTER.

5. Principles of Mechanism; Drawing. *Tu, Th*, 9½–11½, and additional time arranged with instructor. *Three-fifths Course*. Professor DENISON.

Course 5 must be preceded by Course 1 or 1a in Mathematics, and by Courses 1 and 5 in Drawing.

8. Prime Movers; Water Wheels and Steam Engines. *Tu, Th*, 11½–12½. Professor COOLEY and Assistant Professor WAGNER.

Course 8 must be preceded by Course 7.

9. Thermodynamics; Hot-air and Gas Engines, Air Compressors and Refrigerating Machines. *Tu, Th*, 5–6. Assistant Professor WAGNER.

Course 9 must be preceded by Course 7 and by Courses 1 and 2 in Physics.

10. Theory of Machine Design. *F*, 10½–11½. Professor COOLEY.

Course 10 should be accompanied by Course 5 in Civil Engineering.

11. Design of General Machinery. *M, W, F*, 2–5. *Three-fifths Course*. Professor COOLEY.

Course 11 should be accompanied by Course 10.

15. Experimental Laboratory Work. *Tu, Th*, 2–5. *Two-fifths Course*. Professor COOLEY and Assistant Professor WAGNER.

Course 15 must be preceded by Course 7.

EITHER FIRST OR SECOND SEMESTER.

1. Shop Practice in Wood Work and in Pattern Work. This Course may be elected as
 1a, for beginners, *M, W, F, 9½-12½, three-fifths Course;*
 or 1b, for advanced students, *three-fifths Course. Hours arranged with instructor.* Assistant Professor C. G. TAYLOR.
 In the first semester the work in Course 1 is arranged especially for students in Mechanical Engineering; in the second semester for students in Civil Engineering.
2. Shop Practice in Forging. *Tu, Th, two hours each day, forenoon or afternoon. Two-fifths Course.* Assistant Professor C. G. TAYLOR.
3. Shop Practice in Iron Work. This Course may be elected as
 3a, for beginners, *M, W, F, 9½-12½, three-fifths Course;*
 or 3b, for advanced students, *three-fifths Course. Hours arranged with instructor.* Assistant Professor C. G. TAYLOR.
4. Shop Practice in Foundry Work. *Tu, Th, three hours each day, between 9½ and 12½ or between 2 and 6. Two-fifths Course.* Assistant Professor C. G. TAYLOR.

SECOND SEMESTER.

6. Design of Shop Machinery. *Tu, Th, 8½-10½.* Assistant Professor C. G. TAYLOR.
 Course 6 must be preceded by Course 5, and by Courses 1 and 9 in Drawing.
7. Dynamics of Machinery. *M, W, 8½-9½.* Assistant Professor WAGNER.
 Course 7 must be preceded by Course 6 in Mathematics, and by Course 1 in Physics.
12. Dynamics of Engines; Valve-Gears. *M, W, 10½-11½.* Professor COOLEY and Assistant Professor WAGNER.
 Course 12 must be preceded by Course 8.
13. Machinery and Mill Work. *Tu, Th, 10½-11½.* Professor COOLEY.
14. Design of Engines and Boilers. *Tu, Th, 2-5. Two-fifths Course.* Professor COOLEY.
16. Steam Engineering; Steam Generators; Steam Pumping and Hoisting Machinery; Practical work in the laboratory. *Three-fifths Course. Hours arranged with instructors.* Professor COOLEY and Assistant Professor WAGNER.
 Course 16 must be preceded by Course 8.

MARINE ENGINEERING.

FIRST SEMESTER.

- [1. Naval Architecture. *M, W, F, 11½-12½; Tu, Th, 9½-10½.*
 Course 1 is not given in 1890-91.]

SECOND SEMESTER.

2. Marine Engines. *M, Tu, Th, 9½-10½.* Professor COOLEY.
- [3. Ship-Building. *Tu, Th, 11½-12½.*
 Course 3 is not given in 1890-91.]

MINING ENGINEERING.

SECOND SEMESTER.

1. Mining. *M, Tu, W, Th, F, 11½-12½.* Professor PETTEE.

This Course is open only to those who are candidates for the degree of Bachelor of Science in Mining Engineering.

METALLURGY.

FIRST SEMESTER.

1. Fuel and Refractory Material, Iron, Steel, Copper, and Zinc. *Three-fifths Course. Hours arranged with instructor.* Assistant Professor E. D. CAMPBELL.

Course 1 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

SECOND SEMESTER.

2. Lead, Silver, Gold, Mercury, and other metals. *Two-fifths Course. Hours arranged with instructor.* Assistant Professor E. D. CAMPBELL.

Course 2 must be preceded by Course 1 or Course 3 in Analytical Chemistry.

REQUIREMENTS FOR GRADUATION.

The Bachelors' Degrees.

[For the Higher Degrees, see page 81.]

The degree of Bachelor of Arts, Bachelor of Philosophy, Bachelor of Science, or Bachelor of Letters may be earned either on the credit system, or on the university system. A description of the latter is given on page 80. The requirements for graduation on the credit system are as follows:

GRADUATION ON THE CREDIT SYSTEM.

Under the credit system, the Faculty recommend for graduation students who have completed a stated number of *Full Courses* of study, according to the requirements specified below,—a part being prescribed and a part being chosen by the student. A *Full Course* of study comprises five exercises a week during a semester, whether in recitations, laboratory work, or lectures. It is not essential that the exercises constituting a *Full Course* shall be in one and the same branch of study. Thus, a part (two, for instance, a *two-fifths Course*) may be in Mathematics, a part (say two) in Greek, and a part (say one, a *one-fifth Course*) in Latin, making a total of five.

THE DEGREE OF BACHELOR OF ARTS.

To obtain the recommendation of the Faculty for the degree of Bachelor of Arts, the student must complete *twenty-four Full Courses*. The prescribed portion of this work is as follows:

In Greek: Courses 1, 2, 3, 4, and either 5a or 5b.

In Latin: Courses 1, 2, 3, 4.

In French: Courses 1, 2.

In English: Courses 1, 2.

In Philosophy: Course 1 or Course 2.

In Mathematics: Courses 1a, 2, 3a, 4a.*

But after a student has completed Courses 1, 2, and 3 in Greek, 1 and 2 in Latin, and 1a and 2, or an equivalent, in Mathematics, he may, at his option, discontinue the study of any one of these three subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-four Full Courses*.

THE DEGREE OF BACHELOR OF PHILOSOPHY.

To obtain the recommendation of the Faculty for the degree of Bachelor of Philosophy, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In Latin: Courses 1, 2, 3, 4.

In French: (a) for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 2;

or (b) for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German: (a) for those who entered *without* German, three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4;

or (b) for those who entered *with* German, one and three-fifths Full Courses, taken from options in Courses 3, 4.

In English: Courses 1, 2.

In Philosophy: Course 1 or Course 2.

In Mathematics: Courses 1a, 2, 3a, 4a.*

But after a student has completed Courses 1 and 2 in Latin, 1a and 2, or an equivalent, in Mathematics, and one and three-fifths Full Courses in German (if he entered *without* German) or Courses 1 and 2 in French (if he entered *without* French), he may, at his option, discontinue the study of Latin, or Mathematics, or of the

*Instead of these Courses the student is permitted to take other Courses in Mathematics of equivalent amount.

modern language (French or German) which he began in the University. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

THE DEGREE OF BACHELOR OF SCIENCE (IN GENERAL SCIENCE).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in General Science, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French: (a) for those who entered *without* French, three and one-fifth Full Courses, including Courses 1, 2;
or (b) for those who entered *with* French, one and three-fifths Full Courses in advanced work.

In German: (a) for those who entered *without* German, three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4;
or (b) for those who entered *with* German, one and three-fifths Full Courses, taken from the options in Courses 3, 4.

In English: Courses 1, 2.

In Philosophy: Course 1 or Course 2.

In Mathematics: Courses 1a, 2, or an equivalent.

In Physics: Course 1.

In General Chemistry: Course 1.

In Zoölogy, in Botany, or in General Biology: one Full Course

In Physical Sciences or in Biological Sciences: five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

THE DEGREE OF BACHELOR OF SCIENCE (IN CHEMISTRY),

The requirements for the degree to be given on completion of the course in Chemistry may be found on page 96.

THE DEGREE OF BACHELOR OF SCIENCE (IN BIOLOGY).

The requirements for the degree to be given on completion of the course in Biology may be found on page 97.

THE DEGREE OF BACHELOR OF SCIENCE (IN CIVIL, MECHANICAL, MINING, OR ELECTRICAL ENGINEERING).

The requirements for the degree to be given on completion of a course in Engineering may be found on pages 92 to 95.

THE DEGREE OF BACHELOR OF LETTERS.

To obtain the recommendation of the Faculty for the degree of Bachelor of Letters, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French: three and one-fifth Full Courses, including Courses 1, 2.

In German: three and one-fifth Full Courses, including Course 1 and options in Courses 2, 3, 4.

In English: Courses 1, 2, 3, 4.

In History: One and two-fifths Full Courses, including Courses 1, 7.

In Philosophy: Course 1 or Course 2.

In Mathematics: Course 1a.

But after a student has completed Courses 1 and 2 in French and one and three-fifths Full Courses in German, he may, at his option, discontinue either of these two subjects. From the other Courses offered he must choose and complete enough to make in all *twenty-six Full Courses*.

GRADUATION ON THE UNIVERSITY SYSTEM.

Admission of Undergraduates.

1. The privileges of the university system are open to undergraduates who have completed their second year of residence, and have also completed at least twelve Full Courses, including all the prescribed work—offered in the first two years—for some one of the Bachelors' degrees.

Conditions for Entering Upon the Work.

2. Before beginning his work each undergraduate student must make application to the Registrar, and receive from him a certificate that he is entitled to enter upon the work. This application must be made before the student enters on the work of his third year of collegiate residence. In cases of exceptional character, however, the Faculty may grant permission to begin work on the university system at a later date.

Nature of the Work.

3. Students who are working on the university system are not held to the completion of a fixed number of Courses, but will be required to pursue three distinct lines of study, one "*major study*" and two "*minor studies*" and, at the close of the work, to pass a

special examination on those studies. The committee in charge of any undergraduate's work may, however, at their option, accept in lieu of the final examination in a minor study, approved work, in the line of that study or germane to it, done on the credit system, equivalent to one-fourth of the amount of work the student would have been obliged to complete before graduation, if he had continued on the credit system.

Supervision of the Work.

4. The work of students carrying on their studies under the university system will be supervised by committees of the Faculty. The members of the committee in each case consist of the professors in charge of the student's work, the professor in charge of the major study being chairman. On making his application to the Registrar, each student will be directed to the proper committee.

Attendance.

5. Students on the university system are subject to all the rules of this Department relating to attendance and to examinations. No student can be excused from any work that he has once entered upon, nor from any examination, without the consent of the instructor in charge of the work. Examinations passed at the close of each semester on ordinary class work shall not count as an equivalent or in abatement of the final examination to be passed for a degree, except as provided above in paragraph 3.

Bachelors' Degrees.

6. Undergraduates who have been enrolled as candidates under the university system for at least three semesters, may be admitted to a special examination for a Bachelor's degree at a date not earlier than the end of three and a half years of residence at the University. Before being recommended for any Bachelor's degree, however, they must have completed all the Courses prescribed for that degree. The examination will be conducted by the regular committee and such other persons as they may ask to assist them.

The Higher Degrees.

Candidates for Higher Degrees will pursue their studies on the university system, described above. But for the Master's degree a

course of study may, at the discretion of the Faculty, be approved, which does not confine the work rigorously to one major and two minor studies.

THE MASTERS' DEGREES.

The Masters' degrees are open to Bachelors of this University, or of any other reputable university or college; a residence of at least one year at the University is required, except as stated below.

1. *Residents*.—Those who have received a Bachelor's degree at this University, or at any other reputable university or college, may be recommended for the corresponding Master's degree after a year's residence at the University, provided they pass examination on an approved course of study (see paragraph 3 on page 80), and present a satisfactory thesis.

N. B. Students properly qualified may be permitted to pursue at the same time studies for a Master's degree, and studies in any of the professional schools, on condition that the term of study and residence in this Department be extended to cover two years instead of one.

2. *Non-Residents*.—A Bachelor of Arts, Bachelor of Science, Bachelor of Philosophy, or Bachelor of Letters, of this University, may be recommended for the corresponding Master's degree, without residence at the University, provided he spends at least two years on a course of study approved by the Faculty, presents a report of progress at least once in each semester to the chairman of the committee in charge of his work, passes the required examinations, and presents a satisfactory thesis. *This privilege is restricted to graduates of this University.*

THE DOCTORS' DEGREES.

1. The Doctors' degrees shall be conferred only on persons who have previously received a Bachelor's degree, either here or at some other reputable university or college, and also during residence here have made special proficiency in some one branch of study, and good attainments in two other branches, and have presented a thesis that shall evince the power of research and of independent investigation. It is not intended that the Doctors' degrees shall be won merely by faithful and industrious work for a prescribed time in some assigned course of study, and no definite term of required

residence can be specified; but it is the practice of the University to require at least one full year of residence of candidates that have already earned a Master's degree, and at least two full years of candidates that have previously taken only a Bachelor's degree.

2. The degree of Doctor of Philosophy shall be open to persons that have received the degree of Bachelor of Arts, or of Bachelor of Philosophy; the degree of Doctor of Science to persons that have received the degree of Bachelor of Science; and the degree of Doctor of Letters to persons who have received the degree of Bachelor of Letters.

THE DEGREES OF CIVIL ENGINEER, MECHANICAL ENGINEER,
MINING ENGINEER, AND ELECTRICAL ENGINEER.

The requirements for these degrees may be found on page 95.

SPECIAL REGULATIONS RELATING TO THE HIGHER DEGREES.

1. Applicants for an advanced degree, whether resident or non-resident, are required to announce to the Faculty, through the President, as early as the fifteenth of October of each year, the particular branches of study to which they wish to give special attention. The supervision of their work will then be entrusted to the proper committee.

2. The subject of the thesis must be announced to the President as early as the first of December of the college year in which the applicant expects to take the degree.

3. It is required in the case of a resident applicant that, so far as the resources of the University permit, the thesis be upon a subject requiring research. The thesis of a non-resident applicant must also be upon a subject requiring independent research, if possible.

4. The thesis must be completed and put into the hands of the chairman of the proper committee as early as the first of May of the year in which the applicant expects to take the degree.

5. The thesis must be prepared for close scrutiny with reference not only to its technical merits, but also to its merits as a specimen of literary workmanship. It must be preceded by an Analytical Table of Contents, and a carefully prepared account of the authorities made use of.

6. The thesis must be read and defended in public at such time as the Faculty may appoint; and, in case of a Master's degree, a

bound copy, either written or printed, must be deposited in the University library.

7. Candidates for the degree of Doctor of Philosophy, Doctor of Science, or Doctor of Letters, in case of the acceptance of their theses, are also required to have the accepted theses printed, and to present twenty-five copies of the same to the University library, unless by special vote of the Faculty a smaller number is deemed sufficient.

FURTHER DESCRIPTION OF COURSES IN TECHNOLOGICAL AND PROFESSIONAL STUDIES.

Although the University has no School of Technology, as a separate organization, instruction is given in the branches pursued in such a school. Accordingly, fuller statements than are given above concerning the engineering courses, are here added; and also statements of special interest to those who desire to pursue extended studies in chemistry, and in biology, or to prepare themselves for the profession of teaching. The pharmaceutical courses are described in the chapter on the School of Pharmacy.

I. ENGINEERING.

The University offers to persons who wish to become professional engineers, thorough courses of study extending over about four years. In these courses of study, the aim of the University is to lay a foundation of sound theory, sufficiently broad and deep to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession; and at the same time to impart such a knowledge of the usual professional practice, as shall make its students useful in any position to which they may be called. While the adaptation of theory to practice can be thoroughly learned only by experience, there are many matters in which the routine work of an engineering field party, office, or drafting room can be carried out on a greater or less scale in a training school.

In *Civil Engineering* all the technical branches are under the direct care of those who have had professional experience as well as a full scientific training, and in all particulars the course embodies as close an imitation of the requirements of active labor as the instructors who have the several branches in charge can devise.

In *Mechanical Engineering* the course of study, though to some extent parallel with that in civil engineering, includes a wide range of special studies. Prominence is given to the study of steam engineering, and in this branch a large amount of practical work is done. The instruction is arranged to accommodate those who wish to devote their time principally to mechanical engineering proper, to steam engineering, or to marine engineering and naval architecture.

In *Mining Engineering and Metallurgy* the course of instruction, which is intended to cover about four years of study, includes a part of that provided for students in civil and in mechanical engineering, though more especial attention is paid in the latter part of the course to mineralogy, geology, and chemistry. The instruction in the technical branches is arranged so as to meet the wants, both of those whose purpose it is to confine their professional work more closely to metallurgy, and of those who intend to engage in the practice of mining and metallurgy combined.

In *Electrical Engineering* the first three years of the course are nearly the same as in mechanical engineering. Besides the preliminary work in mathematics, language, drawing, and physics, instruction is given in pattern making, metal work, forging, and foundry work; and enough of the study of steam engines and other prime movers is included to meet the needs of the professional electrical engineer.

REQUIREMENTS FOR ADMISSION.

Candidates for a degree in any of the courses in engineering will be examined in the following subjects:

1. **ENGLISH LANGUAGE.**—The same as for the degree of Bachelor of Arts (see page 34).

2. **MATHEMATICS.**—*Algebra and Geometry.*—The same as for the degree of Bachelor of Arts (see page 34).

Trigonometry.—Plane Trigonometry as given in Olney's Elements of Trigonometry, or an equivalent in other authors. A candidate who has had no opportunity for preparation in Trigonometry may be admitted, if satisfactory examinations are passed in the other subjects, but he will be required to make up the deficiency by extra work in the University classes in that subject.

3. **HISTORY.**—The same as for the Course in General Science (see page 36).

4. PHYSICS.—The same as for the degree of Bachelor of Arts (see page 35).

5. ENGLISH LITERATURE.—The same as for the degree of Bachelor of Letters (see page 38).

6. CHEMISTRY, GEOLOGY, ZOÖLOGY, PHYSIOLOGY, PHYSICAL GEOGRAPHY, AND ASTRONOMY.—In any two of these subjects (see page 37).

Students not candidates for a degree may be admitted to pursue such studies as they prefer, provided they are found prepared to join the classes in these studies. They will be expected to attend all the lectures, recitations, and examinations in the branches prescribed for the regular students, and will be required to take enough work to occupy them profitably.

COURSES OF INSTRUCTION.

The studies pursued in the earlier part of the course comprise in *Mathematics*, algebra, trigonometry, analytic geometry, and the elements of differential and integral calculus; in *French and German*, an amount covering in all about two years of study; in *English*, a course in higher English grammar and composition; in *Physics* and *Chemistry* the study of the elementary principles; and in *Drawing*, practice in geometrical and in mechanical drawing, and in the study of descriptive geometry.

The more technical subjects are taken up in the latter part of the course. Some of these subjects are of equal value to all classes of engineering students, such as analytical and applied mechanics, the strength and resistance of materials, and the metallurgy of the useful metals, especially iron and steel; others are adapted more particularly to the wants of the special students in the several courses. Their general scope may be seen from the following descriptive outline.

1. *Drawing*.—A very complete course in mechanical drawing is given, embracing plane projection drawing, isometric drawing, descriptive geometry, and the elementary principles of coloring and shading, with original problems executed in the drawing room. Examples from numerical data are always given in all branches, and copying from the flat is avoided. Students in mechanical engineering are required to sketch pieces of machinery, and afterwards to make working drawings suitable for use in the shop. Problems peculiar to mining practice are also given. The plans of surveys, plane-table work, maps, designs in engineering construction,

and the thesis drawings naturally come under this head. Instruction is also given in free-hand drawing, topographical drawing, ornamentation and lettering, shades and shadows, linear perspective, and drawing for stone cutting. The work in drawing occupies the student a part of almost every day throughout the course.

2. *Surveying*.—The work in surveying combines theory and practice. A course of lectures and text-book work, in daily exercises, covers so much of one year as is not given to field work; the theory of instruments, and all the operations of surveying, laying out work, and computing, are explained in detail. Every student is afforded abundant opportunity for becoming familiar, by actual use, with the excellent and full assortment of instruments owned by the University, embracing those usually employed in actual work, and numbering enough to equip well the parties. The classes in surveying are drilled in all the field work that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide areas, and solve problems in heights and distances from data taken by themselves. They also determine the meridian, and take observations for latitude. This work is done during the fall months; the finished plans of the surveys are made during the winter.

The classes in railroad engineering have practice in running levels and curves of different kinds, and in the measurement of earth-work. In the month of June they are taken into the field as a railroad party, for a space of four weeks continuously where, under competent supervision, they go through all the field work for a projected line; doing all the work up to the point of actual construction, such as reconnoissance, preliminary and location survey, cross-sectioning, staking out, contouring, and topography. A plan and profile, carefully made in the field by the students from the notes of the party, complete this portion of the subject, and serve to fix the practical application of the principles obtained from the text-books and lectures. In the above work are usually included a plane-table survey, triangulation, and some hydrography when the selected locality is favorable.

The principal text-books used in this work are Johnson's *Surveying*, Searle's *Field-Book for Engineers*, and Rankine's *Civil Engineering*.

3. *Strength and Resistance of Materials*.—A course of recitations and lectures continuing through the first half year is devoted to this subject, and is attended by all the engineering students. The action of the different materials under applied forces, the distribution of stress, and the proper proportions to be given to the different parts of structures in order that they may safely fulfill their several functions, are carefully studied.

4. *Theory of Structures*.—Roof and bridge trusses, in wood and iron, arches, in wood, iron, and stone, trestles, brick and stone masonry, foundations, tunnels, and, in general, the whole theory of structures are discussed. In this course, as in the preceding (3), Rankine's Civil Engineering is used as a text-book supplemented by full explanations, additional notes, lectures, examples, and problems.

A complete course of instruction is also given in the graphical analysis of roof and bridge trusses and arches, as recently developed and applied. The student is made familiar with both the analytical and graphical methods of treatment and thus possesses ready proof of the accuracy of his calculations.

5. *Hydraulics*.—The law of the flow of water through orifices and pipes, and over weirs, the gauging of streams and rivers, the designing of works for water supply, drainage and sewerage, the laying out of canals, and the subjects of river and harbor improvements are treated in this course.

6. *Machinery, Prime Movers, and Millwork*.—A course of instruction is given in mechanism, or the general principles of machinery, involving the study of gearing, screws, cranks, and levers, and the dynamics of machinery. In the study of prime movers, special attention is given to turbine and other water motors, and to steam engines. In the theory of machine construction, problems involving the strength and design of machines, and the materials used in their construction are studied at length, in connection with such examples as illustrate the best practice. The instruction in millwork covers the distribution of power and the arrangement of shafting and machinery in manufacturing establishments. Practical problems involving the strength of shafting, belting, and gearing, are fully treated. Tests are made to determine the efficiency of machines, and the value of lubricants.

7. *Designs in Engineering and in Machine Construction.*—Contemporaneously with the study of theory students are required to work out problems in design. They are furnished with the usual data for a design, and the kind or type of structure or machine is indicated. They are then expected to make the necessary calculations, paying particular attention to proportioning the different parts so as to secure strength, simplicity, and effect, and to present at a specified date complete working drawings, giving full details, accompanied by bills of materials, estimates, and specifications.

8. A course in *Thermodynamics* embraces the study of the principles governing the action of heat engines in general, hot-air and gas engines, air compressors, compressed-air engines, and refrigerating apparatus.

9. *Steam Engineering.*—The work in this branch covers the practical use of steam. Furnaces and boilers are studied with reference to proper combustion of fuel, to securing maximum evaporative efficiency, and to proportioning the parts for strength, durability, and accessibility for cleaning and repairs. The care and management of engines and boilers, both in use and out of use, are fully considered. A study is made of the principal steam pumps and pumping engines. The practical application of steam to heating and ventilating purposes is treated by lectures, and by inspection of actual plants. Tests are made to determine the value of fuels, quality of steam, and the efficiency of furnaces, boilers, and engines.

10. *Laboratory Work.*—The laboratory work embraces experimental courses in the mechanical laboratory, and the practical courses in the various work-shops. Instruction is given in the principles governing the action of cutting tools and the principal machines and hand tools used in the shop. Lectures are given on pattern making, moulding, and founding, covering the principal features of each.

The *Shop Practice* covers the application of principles previously studied. It comprises the actual manipulation of the tools used in working metal and wood, and in moulding. The student is required to do work in pattern making, and moulding in green sand, in dry sand, and in loam, and will charge and have the management of the cupola and brass furnace during the operations of casting. Careful

attention is given to the operations of founding and to making composition metals for specific purposes. The student is also required to put in practice, at the blacksmith's forge, his knowledge of the elementary principles of forging, and to forge and temper his own cutting tools. By working with iron and steel of different qualities the student becomes familiar with all grades of those materials. Practice is also afforded in soldering, brazing, and steam-fitting.

11. *Marine Engineering and Naval Architecture*.—The instruction in this branch comprises the study of marine steam engines and propelling instruments, the hydraulics of ship-building, buoyancy, metacentre, stability and trim, weight and centre of gravity, waves and rolling, structural strength, speed and resistance, propulsion by sails and steam engines, laying-off and taking-off and other topics.

12. *Economic Geology*.—Particular attention is paid to the geology of mines and mineral districts, and to the modes of occurrence and distribution of mineral substances that have an economic or commercial importance.

13. *Mining*.—In this branch the instruction is given mainly by lectures. The machines in use at the best mines are described, and the mutual relations of parts explained and illustrated with the aid of plates and diagrams. The different operations connected with the discovery, opening, development, and working of mines are all studied in their proper order.

14. *Metallurgy*.—A course of instruction by lectures and recitations is given upon the subjects of fuel, refractory material, iron and steel, copper, silver, gold, zinc, lead, and aluminum, extending over an entire year. The lectures are illustrated by charts and drawings of furnaces and appliances used, and by samples of furnace products.

15. *Electrical Engineering*.—The special electrical courses, additional to the elementary study of the subject, are devoted to primary and secondary generators, electro-metallurgy, electrical units and methods of measurement, dynamo-electric machinery, arc and glow lamps, photometry, and the distribution of electricity and transmission of power. In addition, elective courses in mathematical electricity are offered.

The laboratory work in electricity is devoted mainly to the investigation of primary and secondary batteries, to practice in making electrical measurements of precision by all the best methods, to setting up and testing dynamos, motors, and storage batteries for efficiency, to photometry of both arc and glow lamps, and to special investigations connected with the preparation of a thesis.

16. *Visits of Inspection.*—As often as may be practicable, visits are paid to neighboring manufacturing establishments, and to electric-light and electric-power stations, for the purpose of acquiring a knowledge of the methods employed in building, in the construction of bridges, machinery, and ships, and the best practice in electrical manufacturing and engineering on a large scale.

FACILITIES FOR INSTRUCTION.

The collections for illustrating the instruction given comprise models, drawings, photographs, lithographs, and blue prints representing trusses, arches, and details of construction in iron, wood, and stone; also shapes of iron, working models of turbines and engines, and working drawings of a number of bridges. These collections are receiving additions from year to year, by gift and purchase, and are invaluable to the student.

Tests of engines and boilers, and of machinery in general, will be made on request, and the profit of such work devoted to extending the facilities of the engineering laboratory. The data of all experiments and tests made are kept in the laboratory records.

All of the laboratory work is on a practical basis, and is done as nearly as possible as it would be done in any well arranged manufacturing establishment. There is also a large and convenient metallurgical laboratory connected with the chemical laboratory, amply supplied with assay furnaces and other appliances such as are usually found in laboratories of this description. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all; and frequent references are made to them in the class room as the various subjects are brought forward.

EXAMINATIONS.

Examinations, usually in writing, are held at the end of each semester, but the classes are liable to be examined at any time, without notice, on any portion of their previous work.

REQUIREMENTS FOR GRADUATION.

Upon the completion of a prescribed course of study, amounting to twenty-five Full Courses,* as given below, and the presentation of a satisfactory thesis, the student receives the degree of Bachelor of Science. The diploma given indicates the line of study pursued.

Bachelors of Arts, of Philosophy, of Science, and of Letters, of this University, and graduates of any other reputable college, are recommended for the same degree with the regular students, after attendance on, and a satisfactory examination in, the technical subjects alone of the several courses. These studies can be completed in two years. The culture imparted by classical or other liberal training will be found to have its uses for one engaged in engineering work, and the previous discipline of the faculties in exact research will enable the professional student to master more easily the requirements of the course. All the time the student can devote to general studies before taking up specialties will be well spent.

The requirements for the several degrees are as follows:

1. *In Civil Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Civil Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German: four Full Courses, to be selected by the student from all the Courses open to him in these two languages.
(See pages 48, 50, and 51.)

In English: Course 1.

In Mathematics: Courses 1, 2, 3, 4, 5, 6.

In Physics: Course 1.

In General Chemistry: Course 1.

In Mineralogy: Course 1.

In Astronomy: Course 4.

In Drawing: Courses 1, 2, 4, 5, 6, 14.

In Surveying: Courses 1, 2, 3.

In Civil Engineering: Courses 1, 2, 3, 4, 5, 6, 7, 8, 9.

In Mechanical Engineering: Course 8.

From the other Courses offered the student must choose and

*For explanation of the term Full Course, see page 77; and for further information in regard to the Courses prescribed for graduation see pages 47 to 77.

complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

2. *In Mechanical Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mechanical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German: four Full Courses, to be selected by the student from all the Courses open to him in these two languages.
(See pages 48, 50, and 51.)

In English: Course 1.

In Mathematics: Courses 1, 2, 3, 4, 5, 6.

In Physics: Courses 1, 2.

In General Chemistry: Course 1; or in Analytical Chemistry; Course 3.

In Drawing: Courses 1, 5, 6, 9.

In Surveying: Course 4.

In Civil Engineering: Courses 3, 5, 9.

In Mechanical Engineering: Courses 1a, 2, 3a, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16.

In Metallurgy: Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

3. *In Mining Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Mining Engineering, the student must complete one of the two following sets of requirements:

I.

(*Mining.*)

In French and German, four Full Courses, to be selected by the student from all the Courses open to him in these two languages.
(See pages 48, 50, and 51.)

In English: Course 1.

In Mathematics: Courses 1, 2, 3, 4, 5, 6.

In Physics: Course 1.

In General Chemistry: Course 1.

In Analytical Chemistry: Courses 1, 4, 8, 9.

In Mineralogy: Course 2.

In Geology: Courses 8, 9.

In Drawing: Courses 1, 5.

In Surveying: Course 1.

In Civil Engineering: Courses 1, 2, 3, 5.

In Mechanical Engineering: Course 8.

In Mining Engineering: Course 1.

In Metallurgy: Course 1.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

II.

(*Metallurgy.*)

In French and German: four Full Courses, to be selected by the student from all the Courses open to him in these two languages.

(See pages 48, 50, and 51.)

In English: Course 1.

In Mathematics: Courses 1a, 2.

In Physics: Course 1.

In General Chemistry: Course 1.

In Analytical Chemistry: Courses 1, 4, 6, 7, 8, 9.

In Mineralogy: Course 2.

In Geology: Courses 8, 9.

In Drawing: Courses 1, 5.

In Mechanical Engineering: Courses 1a, 2, 3a.

In Mining Engineering: Course 1.

In Metallurgy: Courses 1, 2.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

4. In *Electrical Engineering.*

To obtain the recommendation of the Faculty for the degree of Bachelor of Science, for a course in Electrical Engineering, the student must complete *twenty-five Full Courses*. The prescribed portion of this work is as follows:

In French and German: four Full Courses, to be selected by the student from all the Courses open to him in these two languages.

(See pages 48, 50, and 51.)

In English: Course 1.

In Mathematics: Courses 1, 2, 3, 4, 6.

In Physics: Courses 1, 2, 3a, 4, 5a, 8a, 9.

In General Chemistry: Course 1; or in Analytical Chemistry: Course 3.

In Drawing: Courses 1, 5, 6, 9.

In Civil Engineering: Course 5.

In Mechanical Engineering: Courses 1a, 2, 3a, 4, 5, 7, 8.

From the other Courses offered the student must choose and complete enough to make in all *twenty-five Full Courses*. He must also prepare a satisfactory thesis.

REQUIREMENTS FOR THE DEGREE OF CIVIL ENGINEER, MECHANICAL
ENGINEER, MINING ENGINEER, AND ELEC-
TRICAL ENGINEER.

The conditions on which the degree of Civil Engineer, as a second degree, is conferred, are as follows:

The degree of Civil Engineer may be conferred upon Bachelors of Science of this University, who have taken the degree for a course in civil engineering, if they furnish satisfactory evidence that they have pursued further technical studies for at least one year, and, in addition, have been engaged in professional work, in positions of responsibility, for another year. The first of the above requirements may be satisfied by pursuing at the University, under the direction of the Faculty, a prescribed course of study for an amount of time, not necessarily consecutive, equivalent to a college year. If the candidate does not reside at the University, his course of study must be approved in advance by the professor of civil engineering, and he must prepare a satisfactory thesis on some engineering topic, to be presented, together with a detailed account of his professional work, one month, at least, before the date of the annual Commencement at which he expects to receive the degree.

The conditions on which the degrees of Mechanical Engineer, Mining Engineer, and Electrical Engineer, as second degrees, are conferred upon Bachelors of Science of this University who have taken the degree for a course in mechanical engineering, in mining engineering, or in electrical engineering, are analogous in character and in amount to those given above for the degree of Civil Engineer.

II. THE PROFESSIONAL STUDY OF CHEMISTRY.

A course of training is provided, extending through four college years, giving a practical preparation for the pursuit of an analytical and consulting chemist. The work is also adapted to the purpose of teaching or research in chemical science.

After devoting one year mainly to the French and German languages as a basis for their use in scientific literature, and to

mathematics as a support for physics and chemistry, the student enters directly upon laboratory practice in analytical chemistry, which extends through the remainder of the course. Qualitative analysis begins with the second year, and quantitative analysis is reached in the second semester of this year. Organic chemistry begins with the third year, in the first semester of which a study of chemical philosophy is taken. Laboratory physics may be taken in the third year. The larger part of the fourth year is devoted to original research, both experimental and literary. Manufacturing chemistry is given in that year.

Candidates for the degree of Bachelor of Science in Chemistry are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 36).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Chemistry, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French: (a) for those who entered *without* French, Courses 1, 2, 4;

or (b) for those who entered *with* French, Course 4.

In German: (a) for those who entered *without* German one and three-fifths Full Courses, including Course 1 and one option in Course 2;

or (b) for those who entered *with* German, one Full Course, taken from options in Courses 3, 4.

In English: Course 1.

In Mathematics: Courses 1a, 2a.

In Drawing: Course 3 or Course 4.

In Geology: Courses 1, 9.

In Physics: Course 1.

In General Chemistry: Course 1.

In General Chemistry: Course 7; or, in Analytical Chemistry: Course 17.

In Analytical and Organic Chemistry: Courses 1, 4, 10, 11.

In Mineralogy: Course 2.

In Chemistry: additional, five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*. Among his elective studies he is recommended to take (a) Course 1 in Botany,

(b) Course 3 in Physics, or (c) Course 1 in Metallurgy and Course 9 in Analytical Chemistry.

A Register of graduates and other former students engaged in practical chemistry or as teachers of chemistry has been published, and copies can be obtained by addressing the Director of the Chemical Laboratory.

III. SPECIAL COURSE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGY.

This course of study has been provided for students who wish to devote their time largely to biological work, either as a preparation for the study of medicine or with a view to teaching or engaging in biological research.

In the first year, modern languages and mathematics, and in the second year, elementary physics and chemistry are required, as being absolutely essential to the successful prosecution of an extended course in science. Zoölogy, botany, and physiology are the most prominent subjects of the course, but full opportunity is given for extended work in physics, chemistry, palæontology, and other sciences. The laboratories of the University are provided with the necessary facilities not only for ordinary biological work, but for somewhat extended research, and every encouragement is given to students, especially in the last year, to devote themselves to original investigations.

Candidates for the degree of Bachelor of Science in Biology are required to pass the same examinations for admission as candidates for the degree of Bachelor of Science in General Science (see page 36).

To obtain the recommendation of the Faculty for the degree of Bachelor of Science in Biology, the student must complete *twenty-six Full Courses*. The prescribed portion of this work is as follows:

In French: (a) for those who entered *without* French, one and three-fifths Full Courses;

or (b) for those who entered *with* French, a four-fifths Course.

In German: (a) for those who entered *without* German, one and three-fifths Full Courses;

or (b) for those who entered *with* German, a four-fifths Course.

In English: Course 1.

In Philosophy: Course 1 or Course 2.

In Mathematics: Courses 1a, 2.

In Physics: Course 1.

In General Chemistry: Course 1.

In General Biology: Courses 1, 2.

In Biological work: additional, five Full Courses.

From the other Courses offered the student must choose and complete enough to make in all *twenty-six Full Courses*.

Candidates for the degree of Bachelor of Science in Biology are strongly recommended to devote as much time as practicable in the early part of their course to the modern languages, mathematics, and the physical sciences. It is expected that they will arrange their work, not only in Biology, but in other subjects, in accordance with a definite plan fixed after conference with the instructors in charge.

IV. THE SCIENCE AND THE ART OF TEACHING.

The aims of the University in providing instruction in the Science and the Art of Teaching, are:

1. To fit University students for the higher positions in the public school service.

It is a natural function of the University, as the head of our system of public instruction, to supply the demand made upon it for furnishing the larger public schools with superintendents, principals, and assistants. Year by year these important positions are falling more and more into the hands of men that have received their education in the University. Till recently, the training given to our graduates has been almost purely literary; it has lacked the professional character that can alone give special fitness for the successful management of schools and school systems. Now, however, the University offers students that wish to become teachers ample facilities for professional study.

2. To promote the study of educational science.

The establishment of a chair of teaching is a recognition of the truth that the art of education has its correlative science; and that the processes of the school room can become rational only by developing and teaching the principles that underlie these processes. Systems of public instruction are everywhere on trial, and the final criteria by which they are to stand or fall must be found in a philosophical study of the educating art.

3. To teach the history of education, and of educational systems and doctrines.

The supreme right of the school is to grow; and much hurtful interference might be avoided by ascertaining the direction of

educational progress and the history of educational thought.

4. To secure to teaching the rights, prerogatives, and advantages of a profession.

5. To give a more perfect unity to our State educational system by bringing the secondary schools into closer relations with the University.

THE TEACHER'S DIPLOMA.

The Teacher's Diploma is given to a student at the time of receiving a Bachelor's degree, provided he has completed three Courses of study offered by the professor of the science and the art of teaching, viz., Courses 1 and 2, and some three-hour Course, and, also, at least one of the Teachers' Courses offered by other professors, and by special examination has shown such marked proficiency in the Course chosen as qualifies him to give instruction. The Diploma is also given to a graduate student at the time of receiving a Master's or a Doctor's degree, provided he has pursued Teaching as a major or a minor study and has also taken a Teachers' Course in some other department.

RULES AND REGULATIONS OF THE DEPARTMENT.

I. ADMISSION CONDITIONS.

All students are regarded as strictly on probation, until they have removed all conditions incurred in the examinations for admission to the University. All such conditions must be removed during the year following the date of the examination. Students who have any admission conditions outstanding at the beginning of their second year of residence will not be allowed to join their classes until such conditions are removed.

II. ELECTION OF STUDIES.

I. The maximum number of hours a week a student may elect without special permission of the Faculty is the following:

- During the first year, sixteen hours:
- During the second year, eighteen hours:
- During the third year, eighteen hours:
- During the fourth year, twenty hours.

In cases of exceptional proficiency additional hours are granted by the Faculty on especial request; but in all cases requests for

permission to take an additional number of hours must be made in writing, and must be deposited in the Registrar's box on or before the *first Monday* of the semester during which the additional work is desired.

N. B. Students who are making up preparatory studies in the Ann Arbor High School are required to deduct the time spent in that school from the maximum number of hours allowed them in the University.

II. In their first year, students are recommended to make their elections in accordance with the following schemes. In cases where, for good reasons, it is not practicable to elect sixteen hours a week, a smaller number (fifteen, or fourteen) may be chosen.

1. For Candidates for the degree of Bachelor of Arts:

First Semester: Greek, four hours; Latin, three hours; Mathematics, three hours; French, four hours; English, two hours.

Second Semester: Greek, four hours; Latin, four hours; Mathematics, four hours; French, four hours.

2. For Candidates for the degree of Bachelor of Philosophy:

First Semester: Latin, three hours; Mathematics, three hours; French and German, eight hours; English, two hours.

Second Semester: Latin, four hours; Mathematics, four hours; French and German, eight hours.

3. For Candidates for the degree of Bachelor of Letters:

First Semester: Mathematics, three hours; French, four hours; German, four hours; History, or other studies, five hours.

Second Semester: French, four hours; German, four hours; English, two hours; History, or other studies, six hours.

4. For Candidates for the degree of Bachelor of Science (in General Science):

First Semester: Mathematics, three hours; French and German, eight hours; other studies, five hours.

Second Semester: Mathematics, four hours; French and German, eight hours; English, two hours; other studies, two hours.

5. For Candidates for the degree of Bachelor of Science (in Chemistry and in Biology):

The same as for the course in General Science.

6. For Candidates for the degree of Bachelor of Science (in Engineering):

a. In Civil Engineering:

First Semester: Mathematics, four hours; Mineralogy, two hours; Drawing, four hours; French, German, or other studies, six hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German, or other studies, seven hours.

b. In Mechanical Engineering:

First Semester: Mathematics, four hours; Drawing, two hours; Mechanical Engineering, five hours; French, German, or other studies, five hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German, Chemistry, or other studies, seven hours.

c. In Mining Engineering:

First Semester: Mathematics, three or four hours; Drawing, two or three hours; French, German, or other studies, sufficient to make a total of sixteen hours.

Second Semester: Mathematics, four hours; English, two hours; Drawing, three hours; French, German, or other studies, seven hours.

d. In Electrical Engineering:

The same as for the course in Mechanical Engineering.

III. Except as provided in (I) and (II) each student may elect his studies and may pursue them in any order he may choose, subject only to the following restrictions.

(a) Before entering on any study the student must give the professor in charge satisfactory evidence that he is prepared to pursue it with advantage.

(b) If he is a candidate for a degree, he must at some time take all the studies "prescribed" for the degree he seeks.

(c) No student will be allowed to elect merely a part of a Course without special permission of the Faculty.

(d) No credit will be allowed to a student for work in any Course, unless the election of the work is formally made and reported to the Registrar before the work is begun.

(e) After the second Monday of each semester no study can be taken up or dropped without special permission of the Faculty.

(f) The Faculty will require a student to drop a part of his work at any time, if in their opinion he is undertaking too much; or to take additional work, if they think he is not sufficiently employed.

(g) The Faculty reserve the right to withdraw the offer of any study not chosen by at least six persons.

IV. After matriculation a student cannot, without special permission of the Faculty, be admitted to examination in any one of the Courses given, until he has received in the University the regular instruction in such Course.

V. The student is urged to make his choice of studies with care, and with reference to some plan. The members of the Faculty will be ready to give advice and assistance in this regard.

III. EXAMINATIONS.

1. All students of this Department, whether candidates for a degree or not, if at work upon the credit system, are required to attend all the examinations in the Courses of study they pursue.

2. No student absent from any regular examination in any Course of study that he may have pursued, will be allowed to take such omitted examination before the next regular examination in that Course. In cases of great urgency, however, the Faculty may grant students special permission to be examined at an earlier date.

3. No student whose examination in any Course is reported as "*Incomplete*," will receive credit for that Course until after the examination has been completed. In case, however, the examination be not completed within one year, the unfinished Course will be regarded and treated as "*Not Passed*."

4. Any student reported as passed "*Conditionally*" in any Course, must remove the condition within one year from the date of the examination in which it was incurred; otherwise, the Course passed conditionally will be regarded and treated as "*Not Passed*."

5. Any student reported as "*Not Passed*" in any Course, will receive no credit for that Course until he has again pursued it as a regular class exercise and has passed the regular examination in the same.

6. Any student detected in the use of illegitimate help at any examination, will be regarded as an *Absentee* from that examination, and will be treated as such.

IV. RELATION TO OTHER DEPARTMENTS.

1. Candidates for a degree in this Department of the University, who wish to pursue studies in any other Department, may be granted that privilege, provided they lack no more than four Full Courses for graduation, and distribute their work in this Department as evenly as possible throughout the year.

2. All students admitted from other Departments of the University to the privileges of this Department are regarded in the class

room as members of this Department, and are required to pass the regular examinations with the classes in which they are enrolled. Violations of this requirement will be deemed a forfeiture of the privileges of this Department; but this rule is not to be interpreted as applying to those who are permitted to attend lectures or other exercises without being enrolled.

V. ATTENDANCE AND DISCIPLINE.

The State of Michigan extends the privileges of the University without charge for tuition, to all persons of either sex, who are qualified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and its honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for those who assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission of the President.

Such delinquencies as tardiness, absence, deficiencies, and offences against good order, in the several departments of instruction, are ordinarily dealt with by the instructor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students are suspended or dismissed, whenever in the opinion of the Faculty they are pursuing a course of conduct seriously detrimental to themselves or to the University.

The following is a By-Law of the Regents:

"Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfill, the purpose of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time he shall be dismissed."

FEES AND EXPENSES.

For information in regard to fees and expenses, see pages 29 to 31.

THE ELISHA JONES CLASSICAL FELLOWSHIP.

In 1889, the Elisha Jones Classical Fellowship was established by Mrs. Catherine E. Jones, in memory of her husband, Professor Elisha Jones, a graduate of this University in the class of 1859, and for many years a member of the Faculty of the Department of Literature, Science, and the Arts.

The Fellowship has at present an income of \$500 a year. Its purpose is "to encourage patient, honest, accurate study of the languages, literature, and archæology of ancient Greece and Rome."

Candidates for this Fellowship must have spent at least three entire semesters as a student in this Department of the University and must be Bachelors of Arts of this University, of not more than two years' standing. Appointments to the Fellowship are made by a Board of Examiners, consisting of President ANGELL and Professors D'OOGHE, KELSEY, WALTER, and HUDSON. The period of incumbency is limited to two academic years, and must be spent at this University "unless at any time the examining board shall see fit to allow the second year to be spent" at some other place favorable to classical study.

The present holder of the Fellowship is Herbert Fletcher De Cou, A. M.

DEPARTMENT

OF

Medicine and Surgery.

The Department of Medicine and Surgery was the first professional school established in the University. Provision was made for it in the legislative act by which the University was organized in 1837, and it was opened for students in 1850. It is distinct in its organization from every other department of the University, and its professors are not required to take any part in conducting the examinations of other students, in recommending them for graduation, or in signing their certificates or diplomas.

The college year begins on the first day of October, and closes on Commencement Day, the Thursday following the last Wednesday in June. There is a recess of three days at Thanksgiving, a vacation of two weeks at the Christmas holidays, and a recess of one week in the month of April. The lectures continue till the middle of June. The examinations are then begun and concluded in time for the Commencement exercises.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission to the Department of Medicine and Surgery must be eighteen years of age, and must present to the Faculty satisfactory evidence of a good moral character.

Women are admitted, as to all other departments of the University, on the same conditions as men.

Matriculates in a regular course in the Department of Literature, Science, and the Arts (page 33), graduates of literary colleges of good standing, graduates of approved diploma schools,* and of other

*The diploma schools comprise all those approved by the Faculty of the Department of Literature, Science, and the Arts. For a list of these, see page 42.

high schools of equal standing, will be admitted without examination on presentation of proper evidence to the Secretary of the Faculty. For all others the requirements for admission are as follows:

1. Arithmetic.
2. Spelling, Grammar, and the Art of Composition.
3. English Literature: such a knowledge as may be acquired by the study of Shaw's Manual of English Literature, or some similar work.
4. Political and Physical Geography. Any of the advanced Geographies used in the higher schools may be used as a text-book.
5. An outline of the history of modern civilized nations, and especially of American history; such as may be found in the Manuals of History used as text-books in high schools.
6. Elementary Zoölogy, including an acquaintance with the characteristics of the principal divisions of the animal kingdom. Packard's Zoölogy may be cited as an illustration of a work to be studied.

NEW REQUIREMENTS IN 1892 AND THEREAFTER.

For students entering after July 1, 1892, the requirements will be as follows:

1. **ENGLISH.**—(a) A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech. (b) An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (common and decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures.

Algebra.—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

Geometry—Plane Geometry.

3. **PHYSICS.**—An amount represented by Avery's Natural Philosophy, or Gage's Introduction to Physical Science.

4. **BOTANY.**—The elements of Vegetable Anatomy and Physiology as given in Gray's Lessons.

5. **ZOÖLOGY.**—Packard's Zoölogy, briefer course.

6. **PHYSIOLOGY.**—Martin's The Human Body, briefer course.

7. **HISTORY.**—Myers's General History, or an equivalent; and Higginson's, or Johnston's, History of the United States.

8. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book.

The examination for admission will be held at 2 p. m., Wednesday, September, 30, 1891. Candidates are required to present

themselves at this time as they are expected to be in attendance on the first day of the term, when the regular course of instruction begins. To provide for cases in which it is absolutely impossible for the candidate to be present at the time announced, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will, therefore, be necessary for the candidate to apply first to the Steward at his office in the University Hall, register his name as a student in the Department of Medicine and Surgery, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine elsewhere for one year, may be admitted to advanced standing after having passed a satisfactory examination on all the studies which have already been pursued by the class to which they seek admission.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and each student is expected to occupy during the session the seats selected. But, by courtesy, at the clinical and other practical lectures, members of the graduating class are allowed the privilege of seats nearest the patient and the lecturer.

COURSE OF INSTRUCTION.

The course of instruction now offered covers four college years of nine months each. The work of the course is systematically arranged, and so graded that the more elementary branches and the practical courses are first taken by the student, while the more advanced courses and theoretical subjects are presented later in the course, so as to secure, as far as practicable, an orderly succession of studies. It is earnestly recommended that all matriculates enter with a view of pursuing this course in full, according to the order of

arrangement in the schedule given below. As the extension of the course to four years is largely due to the need for more thorough instruction in laboratory work, the student who spends but three years in attendance upon lectures, and one year in study with a preceptor, cannot reap the advantage of the full course of laboratory instruction.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and some of the lectures and demonstrations, which it is not desirable to present to the two sexes together, are given to them separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various class exercises, it is found that both sexes may attend with propriety at the same time.

SCHEDULE OF STUDIES.

The following schedule shows the arrangement of studies for the course of four years. The subjects marked with a star (*) are not required of students who spend only three years in this Department.

In the laboratory work, the classes are divided into sections of suitable size, and the statements below under the heading "Hours Required" indicate the total time required of each student, in *what*-ever semester the work may be taken.

FIRST YEAR.

FIRST SEMESTER

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Osteology.	3
Materia Medica.	3
*Analytical Chemistry.	5
Physica.	3
<i>Laboratory Work.</i>	<i>Hours Required.</i>
*Pharmacognosy.	1 to 4 P. M., twice a week for one semester.
*General Chemistry.	2 to 5 P. M., twice a week for one semester
Qualitative Chemistry.	1 to 5 P. M., daily for one semester for four year students, and for twelve week for three-year students.

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Descriptive Anatomy.	3
Materia Medica.	3
*Analytical Chemistry.	5
*Pharmacy.	5
General Chemistry.	5
<i>Laboratory Work.</i>	
The same as in the first semester.	

SECOND YEAR.

FIRST SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Hygiene.	3
Histology.	3
Descriptive Anatomy.	2
Therapeutics.	2
Toxicology or Materia Medica.	2
General Chemistry.	4
<i>Laboratory Work.</i>	<i>Hours Required.</i>
Qualitative Chemistry.	1 to 5 P. M., daily for one semester our-year students, and for twelve weeks for three-year students.
Practical Anatomy.	1 to 4 P. M., daily for twenty weeks.
Practical Hygiene.	1 to 5 P. M., daily for twelve weeks.
Electro-Therapeutics.	1 to 4 P. M., daily for six weeks.
Elementary Histology.	1 to 4 P. M., twice a week for the semester

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Physiological Chemistry	3
Physiology.	3
Descriptive Anatomy.	2
Organic Chemistry.	3
Therapeutics.	2
Electro-Therapeutics.	2
<i>Laboratory Work.</i>	<i>Hours Required.</i>
Qualitative Chemistry.	Same as in the first semester.
Practical Anatomy.	
*Practical Hygiene.	
Electro-Therapeutics.	
*Advanced Histology.	

THIRD YEAR.

FIRST SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Theory and Practice.	3
Surgery.	3
Diseases of Children.	2
Diseases of Women and Obstetrics.	2
Physiology.	2
Medical Jurisprudence.	1
*Meteorology and Climatology.	2
<i>Laboratory Work.</i>	<i>Hours Required.</i>
Analysis of Urine.	1 to 5 P. M., daily for twelve weeks.
*Practical Pathology.	
*Practical Hygiene.	1 to 5 P. M., daily for twelve weeks.
Practical Anatomy.	1 to 4 P. M., daily for twenty weeks.
Advanced Hygiene.	1 to 5 P. M., daily for one semester.
Sanitary Examination of Water.	1 to 5 P. M., daily for twelve weeks.
Detection of Adulterations in Food and Drink.	1 to 5 P. M., daily for one semester.
Physiological Chemistry.	1 to 5 P. M., daily for one semester

Optional {

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Theory and Practice.	3
Surgery.	3
Diseases of Women and Obstetrics.	4
Embryology.	3
Dermatology.	2
Medical Jurisprudence.	1
<i>Laboratory Work.</i>	<i>Hours Required.</i>
Analysis of Urine.	} Same as in the first semester.
*Practical Pathology.	
*Practical Hygiene.	
Practical Anatomy.	
*Practical Physiology.	1 to 5 P. M., daily for the semester.

FOURTH YEAR.**FIRST SEMESTER.**

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Theory and Practice.	3
Surgery.	3
Diseases of Women and Obstetrics.	2
Diseases of Children.	2
Ophthalmology.	1
Pathology.	2
Diseases of Nervous System.	2
<i>Laboratory Work.</i>	
Clinical.	
Bandaging and Dressing.	
Practical Obstetrics.	
Physical Diagnosis.	
Bedside Practice.	
Surgical Anatomy.	

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Theory and Practice.	3
Surgery.	3
Diseases of Women and Obstetrics.	4
Laryngology and Otology.	2
Diseases of Nervous System and Insanity.	2
Pathology.	2
<i>Laboratory Work.</i>	
Clinics and Hospital Practice.	

The afternoons of the fourth year are taken up with case-keeping and hospital work.

EXAMINATIONS.

Written examinations are held at the close of each semester. The final examination in any branch is held at the close of the semester in which the instruction in that branch is completed.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have completed the required courses in laboratory work, and have passed satisfactory examinations on all the required studies included in the full course of instruction. He must have been engaged in the study of medicine for the period of four years. If admitted to advanced standing, he must have attended at least three full courses of medical lectures, *the last two of which must be in this Department*, and have passed the required examinations.

FACILITIES FOR INSTRUCTION.

There are ample collections of plates, photographs, models, specimens, preparations, apparatus, and instruments, for illustrating the different studies embraced in the course. Additions are made from time to time to these collections so that the members of the Faculty are able to adopt every new method of illustration, and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

The following paragraphs may serve to indicate the extent of some of these collections and the character of the work done in the several laboratories. For further information in regard to the University museums, laboratories, and libraries, see pages 18 to 29.

MUSEUM OF ANATOMY.

The museums of Professors Ford and Sager, embracing several thousand specimens, the result of many years' labor in collecting and preparing materials intended to aid directly in teaching, are now the property of the University, and are used in the daily work of the class rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, the various changes that occur from infancy to old age, and the processes of first and second dentition; dissections, general and partial, of the vascular, nervous, and muscular systems, both normal and abnormal; models of various portions of the body in wax, papier maché and plaster, illustrating morbid growths, skin diseases, etc.; preparations in the comparative embryology, neurology, and craniology of the vertebrata; in human embryology, in the anatomy and pathology of the diseases of women, etc.

The collection of monstrosities, both single and double, of man and the lower animals, is one of the largest in the United States.

MATERIA MEDICA.

The collections illustrative of *Materia Medica* consist of a very complete collection of crude organic medicinal substances, finely displayed and arranged according to their order in Natural History; also about one thousand other specimens of simple mineral and vegetable substances, and pharmaceutical and officinal preparations, active principles, etc., arranged in groups convenient for study. Medical Botany is further illustrated by several hundred large finely-colored plates.

ANATOMICAL LABORATORY.

The anatomical laboratory is admirably adapted for its purpose; the rooms are large, well lighted, and well ventilated.

The Anatomical Law of Michigan furnishes, without embarrassment, an ample supply of material for the purpose of practical anatomy. All students who desire it and have completed the requirements in descriptive and practical anatomy, can pursue a course in operative surgery upon the cadaver.

In their first year, medical students have opportunity, under competent instruction, to study comparative anatomy and physiology practically by dissecting various animals. While thus becoming familiar with structures and tissues, they also acquire dexterity in the use of instruments preparatory to work upon the human cadaver.

CHEMICAL LABORATORY.

(See also page 26.)

The Chemical Laboratory provides thorough instruction and suitable appliances for the practical study of all branches of medical chemistry. In each of the two laboratory courses *required for graduation*, namely, qualitative chemistry (devoted to the study of chemical changes and incompatibilities), and analysis of urine (applied to clinical uses and physiological study), students are taken in sections of limited number for daily drill in the class room, to direct the daily practice in the laboratory. Before beginning laboratory work the student takes a preparatory course, with daily recitations, in chemical notation, and at the close of the work in each course is held to an examination.

ELECTRO-THERAPEUTICS.

A practical course in electro-therapeutics is given to advanced students. The apparatus for illustration and experiment consists of representative specimens from the principal foreign and American manufacturers of electrical apparatus. Working models of these are put into the hands of each student for practical use.

PHYSIOLOGICAL LABORATORY.

The apartments which have recently been provided for the physiological laboratory offer unsurpassed facilities for practical work, whether of class instruction or of original investigation. A large and well-lighted room is appropriated chiefly to the use of undergraduate students who perform under the direction of instructors most of the fundamental physiological experiments. The subjects commonly embraced in the practical course relate to the physiology of the special senses, muscular contraction, nerve, reflex action, circulation, respiration, and digestion. A smaller room is devoted to advanced work and original investigation. Conveniently situated are an apparatus room, a dark chamber for optical experiments, an incubation closet, and a large workshop containing machinists' and carpenters' appliances. The instrumental equipment of this laboratory is unusually complete, and contains most of the more essential instruments used in physiological demonstration and research. The apparatus is all new and is of the highest finish and accuracy. The list of instruments includes: five de Bois induction coils; two rotating cylinders with clock-work; one Ludwig's kymographion; tuning-forks for electrical interruption; one adjustable electrical interrupter with clock-work; Fisk's spring-kymograph; recording chronographs; Browning spectroscope; Thompson's galvanometer; Roy-Gaskell heart tonometer; Zeiss microscopes; foot lathe with working tools; etc. The laboratory is open daily for physiological experiment and research.

HISTOLOGICAL LABORATORY.

The histological laboratory is well supplied with microscopes, microscopical accessories, microtomes, imbedding apparatus, and other instruments used in histological work. During his term of instruction in the laboratory each student is furnished with microscopical reagents, a microscope, and a table for his own use, so that the practical work is carried out by each individual for himself. In the elementary course, an effort is made to teach the student the use of the microscope, the methods of teasing, and the methods of mounting paraffine and celloidine sections. The sections given are so arranged as to furnish specimens of the important tissues and most of the organs, but care is taken not to give the class more specimens than they can study properly in the time devoted to the course.

In the advanced course, which is open only to those who have completed the elementary work, the student is instructed in the various methods of hardening, staining, imbedding, section-cutting, and injecting, and is given an opportunity of preparing a very complete collection of specimens in normal histology.

Arrangements have also been made for a course in the practical

embryology of the chick. The number admitted to the class will be limited, and only those will be permitted to take the work who have completed the course in advanced histology.

PATHOLOGICAL LABORATORY.

The pathological laboratory is furnished with microscopes made by R. & J. Beck, Bausch & Lomb Optical Co., and Zeiss, adapted for every requirement. There is also a special microscope with apochromatic object glass, by Zeiss, for high-power work in bacteriology. There is an ample supply of material for all microscopical study in pathology and every requisite for the cultivation and examination of pathogenic bacteria.

Each student is supplied with a microscope. The course of practical work in this laboratory is restricted to students of medicine in their third year, who have taken a course of advanced histology and have obtained a certificate to that effect. The course is given to students in sections every working afternoon, and commences at two o'clock. It consists of practical instruction in morbid histology and bacteriology.

Course in Practical Pathology.—In this course, instruction is given in staining and mounting specimens, and the changes produced by disease are demonstrated in each specimen made by the student. The course includes all the ordinary new growths, such as cancer, sarcoma, fibroma, etc., and all changes produced in organs by disease, such as tuberculosis in the lungs, Bright's disease of the kidney, atheroma of the aorta, etc.

Course in Practical Bacteriology.—This course includes instruction in the use of apparatus for bacteriological investigation, in the sterilization of apparatus, etc., in the making of the various cultivating media, in inoculating tubes, in making plate cultivations, and in inoculating living animals with morbid material for experimental purposes. Students are also taught the various methods for examining sputum for tubercle bacilli, and other fluids from the body for pathogenic bacteria, also how to stain and examine organisms from cultivations. They also stain and mount sections of tissue containing micro-organisms, such as tubercle bacilli in the lungs, and others.

The student taking these courses is thoroughly trained in the various methods required to prepare diseased tissue for examination, and he takes away with him a complete set of specimens illustrating all the important changes produced by disease, so that he has always on hand typical slides to compare with any he may make afterwards. He is also taught how to find, isolate, and cultivate micro-organisms associated with any form of disease, and how to inoculate animals with them and carry out an investigation into their nature and properties.

The science of pathology consists in the study of the etiology or causation of disease and the changes produced in the tissues by it. The study of this science must be preceded by a thorough study of nor-

mal histology, as without good knowledge of this, it is impossible to understand the first principles of the causation or course of disease, as seen in the various parts of the body.

Opportunity for original work in pathology and bacteriology is given to those capable of undertaking it. Through the kindness of Messrs. R. & J. Beck, of London, England, a microscope has been placed at the disposal of the professor of pathology for the use of students in their leisure time to study the specimens they have made in the laboratory.

HYGIENIC LABORATORY.

The hygienic laboratory was opened for work in January, 1889. There is a large room devoted to bacteriological work, which contains all of the improved apparatus employed by Koch. The course in bacteriology extends through three months and requires four hours daily in the laboratory for this time. All the known pathogenic and the most important non-pathogenic germs are studied. The microscopes used are those of Zeiss and Leitz. All animals needed for experimentation are supplied by the laboratory. There are also courses in the chemical and bacteriological examination of drinking water, and in the study of food adulterations. Besides these, advanced students who wish to do practical work in the study of ptomaines and leucomaines, are accommodated.

The objects had in view in the establishment of this laboratory were as follows: (1) Original research as to the causation of disease. (2) Sanitary examinations of food and drink. (3) Instruction to students.

Besides the large bacteriological room, there are rooms fitted especially for gas analysis and water analysis, and private rooms for original research. There are also a cold chamber, a disinfecting chamber, and an animal room.

MUSEUM OF NATURAL HISTORY AND LIBRARY.

Students in medicine have access to the botanical, zoölogical, and geological cabinets of the University, estimated to contain 255,000 specimens. The General Library, containing nearly 60,000 volumes, of which 4,146 are medical works, is also open to all students. A complete catalogue of the library, arranged both by authors and by subjects, is accessible to readers. The leading medical periodicals of this country and of Europe are taken and kept on file.

THE UNIVERSITY HOSPITAL.*

The University Hospital, with pavilion buildings of sufficient capacity for a large number of patients, is thoroughly equipped, and

*This description refers to the buildings that have been occupied for several years past. A new hospital which will largely improve the accommodations and supply increased facilities, is in progress of erection, and will be ready for occupancy by the first of October, 1891.

is in the immediate charge of a competent house surgeon and physician and an experienced matron. The whole is placed under the direction of the Faculty, who attend regularly upon the patients (each upon such cases as come within his special department) and give clinical instruction in the wards to advanced students. In connection with the hospital there is a spacious clinical amphitheatre where clinics are regularly held every day during the college year, for medical, surgical, gynecological, ophthalmological, neurological, dermatological, and venereal cases, at which time examinations are made, prescriptions given, and surgical operations performed in the presence of the class.

A lying-in ward is established in which senior students are given an opportunity to attend cases of labor, and become familiar with the duties of the lying-in room, under the immediate direction of the professor of obstetrics.

There are separate wards for the reception and treatment of patients affected with diseases of the eye and ear. Students are required to take the history and keep a record of patients, and, under proper supervision, are offered an opportunity of personally examining the patients. It is the aim of the Faculty to make instruction in this branch of medicine systematic and thorough, and this they are enabled to do by an abundance of interesting cases which present themselves in the clinic every year.

For the treatment of diseases of the nervous system the hospital is furnished with apparatus for generating all kinds of electric currents. Attendants especially skilled in the application of electricity and massage are put in charge of such cases.

A large portion of the cases admitted to the hospital are from a distance and are of more than common interest, including many cases of chronic diseases of the lungs, the heart, and the nervous system.

The hospital is kept open for patients during the whole college year, but no contagious diseases are admitted. Under the present organization, patients are much better accommodated, and clinical instruction is rendered more systematic and efficient than was formerly possible. The expenses to patients are only for their board, for unusual appliances or special nursing, and for medicines, the services

of the Faculty being rendered gratuitously to those made available for clinical instruction.

Patients who desire to enter the hospital are requested to write to the resident physician to ascertain if there is room for their accommodation, and to obtain a circular giving more fully the rules governing admission.

TEXT-BOOKS AND BOOKS OF REFERENCE.

The books mentioned in the following list are standard authorities, and will form a good nucleus for a medical library. Any one of those mentioned in each department will answer the necessities of the student; and, whenever a preference exists, it is given to the one first in order on the list.

MEDICAL DICTIONARY.—Thomas, or Dunglison.

ANATOMY.—Gray; Leidy; Quain; Darling; Holden.

HISTOLOGY.—Schäfer's *Essentials of Histology*; Klein's *Elements of Histology*. *For Reference.*—Klein's *Atlas of Histology*; Toldt's *Lehrbuch der Histologie*.

PHYSIOLOGY.—First Year—Martin's *Human Body*; Yeo's *Manual of Physiology*. Second Year—Foster's *Text-book of Physiology*; McKendrick's *Text-Book of Physiology*.

CHEMISTRY.—*General Chemistry.*—Richter's *Inorganic Chemistry*; Remsen's *Introduction to the Study of Chemistry*. *For Laboratory.*—Prescott's *First Book in Qualitative Chemistry*; Vaughan's *Physiological Chemistry*; Vaughan and Novy's *Potomaines and Leucomaines*.

PHARMACOLOGY, MATERIA MEDICA, AND THERAPEUTICS.—*Pharmacology.*—Schmiedeberg's *Grundriss der Arzneimittellehre*; T. Lauder Brunton's *Pharmacology, Therapeutics, and Materia Medica*; Erich Harnack's *Lehrbuch der Arzneimittellehre*. *Practical Therapeutics.*—Bartholow; H. C. Wood, Jr.; Ringer; Dujardin-Beumetz; Fothergill. *Toxicology.*—Kobert's *Praktische Toxikologie*.

PATHOLOGY.—Green; Zeigler. *For Reference.*—Hamilton; Payne. *For Laboratory.*—Gibbes's *Practical Histology and Pathology*.

BACTERIOLOGY.—Klein's *Micro-Organisms in Health and Disease*.

OBSTETRICS.—Parvin; Lusk; Playfair; Leishman; Galabin. *For Reference.*—Schroeder; Cazeaux; Hodge. *Special Subjects.*—Tanner on *Pregnancy*; Barnes on *Obstetric Operations*; Elliott's *Obstetric Clinic*; Barker on *Puerperal Diseases*.

DISEASES OF WOMEN.—Thomas; Emmet; Skene; Goodell's *Lessons in Gynæcology*; Byford; Mundé's *Minor Surgical Gynæcology*. *Special Subjects.*—Tilt on *Uterine Therapeutics*; Klob on *Pathological Anatomy of the Female Sexual Organs*; Peaslee on *Ovariectomy*; Sims on *Uterine*.

Surgery; Emmet on Vesico-Vaginal Fistula; Skene on Diseases of the Bladder and Urethra.

DISEASES OF CHILDREN.—J. L. Smith; Eustace Smith; Meigs and Pepper. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; Combe on the Management of Infancy; Routh on Infant Feeding; Holmes, or Guersant, on the Surgical Diseases of Children. *For Reference.*—Keating's Cyclopædia of the Diseases of Children.

PRACTICE OF MEDICINE.—Palmer; Strümpell; Bartholow; Flint; Bristowe; Roberts. *Special Subjects.*—DaCosta, or Finlayson, on Medical Diagnosis; Loomis on Physical Diagnosis; von Jacksch on Clinical Diagnosis.

DISEASES OF THE NERVOUS SYSTEM.—Ross; Gowers; H. C. Wood, Jr.; Hammond; Bramwell on Diseases of the Spinal Cord; Ranney's Anatomy of Nervous System.

DISEASES OF THE SKIN.—Duhring; Robinson. *For Reference.*—Bulkley on Eczema and Acne.

SURGERY.—Ashhurst; Walsham's Practical Surgery; Wyeth. *Special Subjects.*—Billroth on Surgical Pathology; Hamilton on Fractures and Dislocations; Reeve's Orthopædic Surgery; Sayre's Orthopædic Surgery; Sir Henry Thompson, Gouley, and Otis, on Diseases of the Genito-Urinary Organs. *Minor Surgery and Surgical Appliances.*—Mears's Practical Surgery; Hopkins on Bandaging. *For Reference.*—International Encyclopædia of Surgery; Holmes's System of Surgery; Gross's System of Surgery; Agnew's Surgery; Cornil on Syphilis; Gross on Diseases of the Male Sexual Organs.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler; Schweigger; Sælberg Wells; Loring on the Ophthalmoscope; Landolt on the Examination of the Eye. *On the Ear.*—Roosa; Burnett; Pomeroy; Hartmann.

The student who begins a course of reading without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, anatomy, physiology, and general and medical chemistry; then advancing to some other studies, to select one of the first-mentioned text-books in each department, passing to the "*Special Subjects*" only when near the completion of the course.

FEES AND EXPENSES.

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *twenty dollars*, which covers all the expenses for practical anatomy during the whole college course, is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological laboratory. A charge of *five dollars* is made for material used in the pathological laboratory in the combined courses of pathology and bacteriology. A charge of *one dollar* is made for the course in electro-therapeutics.

The professors make no charge for lecture tickets, nor are there any additional charges for the recitations conducted by the assistants to the several professors.

A graduate of any respectable and recognized medical college, who may desire to attend this Department, is permitted such attendance on the payment of the matriculation fee only.

The total amount of fees paid to the University during the whole four years' course, for matriculation, incidental expenses, materials used, and diploma, is, for Michigan students, about \$170.00; and for others, about \$210.00; varying a little with the student's actual laboratory expenses.

OTHER EXPENSES.—Students obtain board and lodging in private families for from three to five dollars a week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half a week. Room rent varies from seventy-five cents to two dollars a week for each student. There are no dormitories and no commons connected with the University. Students on arriving in Ann Arbor can obtain information in regard to rooms and board by calling at the Steward's office.

For additional information in regard to expenses see pages 29 to 31.

A special Announcement giving further information in regard to this Department may be obtained by applying to Dr. Wm. A. Campbell, Secretary of the Department, Ann Arbor, Michigan.

Department of Law.

The Department of Law was opened in 1859. From the first it has been the constant endeavor of the Faculty to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country. No effort will be spared to make it deserve in the future a prosperity like that it has hitherto enjoyed. A spacious building is devoted to its accommodation, with ample debating and society rooms, and in every respect the conveniences of the Department are exceptionally good.

The course of instruction for the degree of Bachelor of Laws is a graded course extending over a period of two years of nine months each; and that for the degree of Master of Laws includes an additional year of the same number of months. The college year begins October 1, and continues till the Thursday following the last Wednesday in June.

The following more specific statements describe the course of instruction, the requirements for admission and for graduation, and the general work of the Department.

COURSE OF INSTRUCTION.

The Lecture Course.

It is the design of the Department to give instruction that shall fit students for practice in any part of the country. The course of instruction embraces the several branches of Constitutional, International, Maritime, Commercial, and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and includes such instruction in Common Law and Equity Pleading, Evidence, and Practice, as will lay a substantial foundation for practice in all departments of law.

Lectures are delivered as follows:*

TO THE JUNIOR CLASS.

PLEADING AND PRACTICE AT COMMON LAW, *Professor Griffin.*

PERSONAL PROPERTY AND TITLE THERETO, BY GIFT, SALE, MORTGAGE,
AND ASSIGNMENT, *Professor Griffin.*

AGENCY, *Professor Wells.*

PRIVATE CORPORATIONS, *Professor Wells.*

PARTNERSHIP, *Professor Wells.*

FIXTURES AND EASEMENTS, *Professor Thompson.*

EQUITY PLEADING AND PRACTICE, *Professor Thompson.*

BAILMENTS, *Professor Knowlton.*

CONTRACTS, *Professor Knowlton.*

THE LAW OF THE DOMESTIC RELATIONS, *Doctor Rogers.*

TORTS, *Doctor Bigelow.*

TO THE SENIOR CLASS.

JURISPRUDENCE OF THE UNITED STATES, *Professor Griffin.*

EVIDENCE, *Professor Griffin.*

THE LAW OF MUNICIPAL CORPORATIONS, *Professor Wells.*

BILLS AND NOTES, AND COMMERCIAL LAW GENERALLY, *Professor Wells.*

CONSTITUTIONAL LAW, *Professor Wells.*

REAL PROPERTY LAW, INCLUDING LANDLORD AND TENANT, *Professor Thompson.*

EQUITY JURISPRUDENCE, *Professor Thompson.*

LAW OF CARRIERS, *Professor Knowlton.*

CRIMINAL LAW, AND MEDICAL QUESTIONS BEARING ON IT, *Doctor Rogers.*

WILLS, THEIR EXECUTION, REVOCATION, AND CONSTRUCTION, *Doctor Bigelow.*

THE ADMINISTRATION AND DISTRIBUTION OF ESTATES OF DECEASED PERSONS, *Doctor Bigelow.*

Members of the junior class are not allowed to attend the lectures delivered to the senior class. But the members of the senior class, inasmuch as they have been over the subjects of the junior year, are encouraged to attend the lectures delivered to the junior class so far as they may be able so to do.

Text-Book Instruction

In addition to the instruction by lectures is the instruction by text-books.

The members of the junior class are required to attend daily recitations in Cooley's edition of Blackstone's Commentaries, Anson

*The death of Professor Wells, which occurred March 4, 1891, will make a readjustment of the lecture course necessary

on Contracts, Stephen's Rules on Pleading, and Lube's Equity Pleading.

The following portions of Blackstone's Commentaries are studied by the class: Sections 2 and 3 of the Introduction; Chapters 1, 7, and 10 of Book I; all of Book II, with the exception of Chapters 18, 22, 27, and 28; Chapters 1, 2, 3, 4, 7, and 14 of Book III. The other portions of the Commentaries are omitted on the ground that they are either covered by the lectures delivered in the Department, or are of no especial importance.

Members of the senior class are required to attend recitations in Heard's Criminal Pleading, and those who come from Code States are expected to attend regular recitations in Bliss on Code Pleading, and they will find the instruction thus obtained invaluable in their subsequent practice. Students from States where the reformed procedure has not been introduced, may or may not, at their option, attend such recitations.

The above text-book work is under the direction of Professor Knowlton, except the work in Lube's Equity Pleading, which is carried on under the direction of Professor Thompson. Each class is divided into five sections, in order that due attention may be given to the individual student.

The Study of Leading Cases.

As much benefit can be derived from a proper study of what are known as Leading Cases, and as it is desirable that students should be familiar with the more important of these cases, the members of the junior class are required to make a study of Leading Common Law Cases. The text-book to be used by the class during the year 1891-92 will be announced hereafter. This work is under the direction of Professor Knowlton.

Elocution and Oratory.

It is important for those who study the law with the view of becoming advocates, that they should give attention to the subject of forensic eloquence, the better to equip them for the performance of their duties as advocates. It is a mistake to suppose that excellence in speaking is simply a gift of nature, and not the result of patient and persistent labor and study.

Instruction in elocution and oratory is highly important to law students. The junior class receive instruction in vocal culture, articulation, and pronunciation; position and gesture; quality and force of voice. An advanced course in oratory is arranged for the senior class.

Recitations and Examinations.

The members of both classes are examined daily throughout the year on the lectures delivered. In addition to this work the classes are divided into sections and required to recite daily upon the lectures, after the manner adopted in the text-book instruction, thereby securing a thorough knowledge of the subjects treated during the year.

At the end of the first year the members of the junior class are subjected to an oral and written examination on the lectures delivered during the year, and their promotion to the senior class is dependent on the manner in which they pass such examination. The examination of the junior class at the end of the year is final on the subjects of that year.

At the end of the second year the members of the senior class are required to pass satisfactory oral and written examinations on the subjects lectured on during the senior year.

Satisfactory examinations must also be passed by the members of both classes in the text-books used for the purposes of instruction.

The Faculty do not hesitate to drop a student from the rolls at any time during the year, when satisfied that such student is neglecting his work and not conforming to the requirements of the Department.

Post-Graduate Course.

At a meeting of the Board of Regents in October, 1889, the following resolution was adopted:

"Resolved, That this Board will confer the degree of Master of Laws on any graduate of the Department of Law who pursues the study of Law in this University for one year after graduation, and who completes to the satisfaction of the Law Faculty such a course of study as may be required; and that the privilege thus extended to graduates of the Law Department of this University is also extended to graduates of other Law Schools, who can satisfy the Faculty of the Department of Law that the course of study for which they obtained their degree was

equivalent to the course of study required for the corresponding degree at the Law Department of this University."

The following course of study is pursued by candidates for the degree of Master of Laws.*

PUBLIC INTERNATIONAL LAW, *President Angell.*

PRIVATE INTERNATIONAL LAW, *Doctor Rogers.*

HISTORY OF MODERN LAW, *Doctor Rogers.*

ADVANCED COURSE IN CONSTITUTIONAL LAW AND CONSTITUTIONAL HISTORY, *Professor Wells.*

HISTORY OF REAL PROPERTY LAW, *Professor Thompson.*

THE LAW OF RAILWAYS, *Professor Knowlton.*

THE LAW OF INTER-STATE COMMERCE, *Professor Cooley.*

ADMIRALTY AND PATENT LAW, *Judge Brown.*

CODES AND CODE PRACTICE, *Judge Maxwell.*

THE LAW OF INSURANCE, *Doctor Bigelow.*

INJUNCTIONS AND RECEIVERS, *Doctor High.*

COMPARATIVE CONSTITUTIONAL LAW, *Professor Hudson.*

TOXICOLOGY IN ITS LEGAL RELATIONS, *Doctor Vaughan.*

SPECIAL HEADS OF MEDICAL JURISPRUDENCE, *Doctor Ewell.*

MEDICO-LEGAL MICROSCOPY, *Professor Howell.*

MINING LAW, *Mr. Clayberg.*

Lectures will be delivered on the above subjects, and all candidates for the degree will be examined on the subjects so lectured on.

In addition to the above course the student will be required to prepare a thesis on some subject to be approved by the Faculty, which thesis must be submitted at least two months prior to Commencement.

The members of the junior and senior classes will not be allowed to attend the lectures given to the post-graduate students, except that members of the senior class may attend, if they desire, the lectures on Mining Law.

Constitutional History and Political Science.

It seems to be conceded now that the law should be studied in a law school, and that the law school should be connected with a university, where students may avail themselves of opportunities for the study of such other branches of learning as are of allied significance.

It is believed that students in the Department of Law who are

* See foot note on page 121.

not graduates of any collegiate institution, and therefore cannot become candidates for an advanced degree in Arts or Science, may nevertheless derive great benefit from the instruction given on kindred subjects in the Department of Literature, Science, and the Arts. Arrangements have been made by means of which students in the Department of Law, having first obtained permission from the Law Faculty, may, on special application to the Registrar of the Department of Literature, Science, and the Arts, attend lectures delivered in that Department, free of charge. But the Law Faculty reserve the right to require such students to give up any or all studies they may be pursuing in the Literary Department, whenever it appears that the pursuit of these studies is attended with an unsatisfactory performance of the duties required in the Department of Law. Among the subjects upon which instruction is there given may be named the following as being particularly suitable for law students: Political and Constitutional History of England; Constitutional History and Constitutional Law of the United States; Comparative Constitutional Law; History of the Middle Ages; Elements of International Law; History of Treaties. Instruction is also given in that Department upon social, sanitary, and economic sciences. Compare pages 55 to 67.

Moot and Club Courts.

Moot Courts are held from time to time during the year, in which students discuss cases previously assigned them for that purpose by the professors. These courts are presided over by the professor lecturing for the day, who, at the conclusion, reviews the arguments and gives his decision upon the points involved. The effort here is to make not merely *theoretical*, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Courts are made the forum for the discussion of such practical questions as most frequently arise in a professional career at the bar; and the attention of the Faculty is directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity is afforded all the senior students to participate in these courts.

Moot Courts are conducted on the theory that certain facts are true, and that the only subject open to discussion is the rule of law

to be applied to them. The student having obtained from the Faculty a statement of facts, is required to prepare pleadings, and draw up a brief in which the rules of law are stated under appropriate divisions and sustained by authorities which he proposes to rely upon in his oral argument.

The fact is recognized that it is desirable to combine theory and practice in the regular work of the Department, and such a course is pursued in so far as it has appeared practicable. It is believed that a student who conducts a case through a Moot Court in accordance with the practice adopted in this Department will gain a clearer insight into matters of practice than students ordinarily obtain who study in offices.

Club Courts are organizations among the students, arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These courts have been found alike interesting and useful to those who have participated in them. The Club Courts are open to members of either the senior or junior class, and students are strongly recommended to connect themselves with some one of these organizations. There are also two flourishing literary societies established and conducted by the students of law for purposes of literary culture.

REQUIREMENTS FOR ADMISSION.

If the person applying for admission intends to be a candidate for a degree at the end of his course, he must be not less than eighteen years of age, and must pass such examination in respect to general education as shall satisfy the Faculty that his educational attainments are such as will justify his entering upon the practice of the law when his legal studies are completed. Examinations will be held in the Lecture Room, in the Law Building, at 2 P. M., on Tuesday and Wednesday, September 29 and 30, 1891. The examination on the first of these days will have reference to general education, and will be on the subjects hereinafter named. The examination on the succeeding day will have reference to legal education, and is confined to candidates for advanced standing. Applicants for advanced standing are required to be present at both of these examinations. Candidates are required to present themselves on these days, as they are expected to be in attendance on the first day of the term, at

which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination.

Before admission to the Department every student is required to present to the Dean of the Faculty the Treasurer's receipt for payment of the matriculation fee and annual fee. It is essential, therefore, that a candidate for admission should apply first to the Steward of the University at his office in University Hall, register his name as a student in the Department of Law, and pay his fees to the Treasurer. He is then entitled to apply for admission, and in case of rejection, the money paid preliminary to his examination will be refunded by the Treasurer.

I. ADMISSION TO JUNIOR CLASS.

In 1891.

Graduates of colleges, and students who have honorably completed an academical or high-school course, and who present a certificate or diploma from the academy or high school will be admitted without preliminary examination. No student who does not present such certificate or diploma will be admitted as a candidate for a degree, until he has passed a satisfactory examination in:

1. Arithmetic and Geography.
2. Spelling, Grammar, and the Art of Composition.
3. United States History, and English History. Ransome's Short History of England, or Green's History of the English People, is recommended as affording the student a proper preparation for the examination in English History.

The examination will be conducted in writing, and from the papers submitted the Faculty will judge of the applicant's knowledge of spelling, grammar, and the art of composition.

Inasmuch as many present themselves a long time after completing their school education, it may be said that the examination will not be technical. The object is not to ascertain the amount of technical school-book knowledge which the candidate possesses, but the aim is to ascertain the results of his previous training, and his present practical capacity and ability to appreciate the technical study of law.

REQUIREMENTS FOR ADMISSION IN 1892.

No prior reading whatever in law is now required of candidates for admission to the junior class, nor will any such requirement be made a condition of admission for the college year commencing October 1, 1891. The Faculty are of the opinion, however, that for the first year, at least, more positive benefit is received from lectures and more positive advancement in law made, by students who, before coming, have read at least the Commentaries of Blackstone, than by those who are beginners here. In this view it is thought advisable to provide for the following additional requirements for admission which will tend to raise the standard of legal education in the Department.

On and after July 1, 1892, the requirements for admission to the junior class will be as follows:

(a) Graduates of any approved college will be admitted as candidates for a degree without any preliminary examination whatever on producing their diplomas.

(b) Matriculates of colleges and students who have completed an academical or high-school course, and who present a certificate or diploma from the academy or high school will be admitted without any examination in English branches, and will only be required to pass an examination on the portions of Blackstone's Commentaries indicated below.

(c) All other candidates for a degree will be required to pass an examination on the English branches above indicated, and also on the following portions of Blackstone's Commentaries (exclusive of editors' notes):

Book I (exclusive of Chapters 3, 4, 5, 6, 8, and 11);

Book III (exclusive of Chapters 5, 6, 15, 16, and 17);

Book IV.

It would be well for all students to read Blackstone carefully before entering the Department, and there is much of historical value to the lawyer in the portions above excluded.

Instruction is given in the Department in Book II, and for that reason it is omitted from the requirements. The Faculty recommend the study of Judge Cooley's edition, that being the edition from which instruction is given during the junior year.

II. ADMISSION TO ADVANCED STANDING.

Candidates for advanced standing will be examined on whatever subjects they may offer themselves for examination on, the examination not being restricted to the subjects included in the junior year, but being allowed as well on the subjects embraced in the senior year. This examination is not a final one on the subjects examined on, but the candidate must satisfy the Faculty that he has made sufficient progress in his study of the law to justify his admission to the senior class. Before graduation every student is required to pass satisfactory examinations on all subjects included in the course.

III. ADMISSION OF SPECIAL STUDENTS.

As students come to the University who have been reading law for a considerable period before making application for admission to the Department of Law, but whose reading has not been sufficiently extensive to bring them within the rule for admission to the senior class, it has been thought best to allow such students to become special students, with the privilege of pursuing a select course of study. They are allowed, under the guidance of the Faculty, to select subjects from the courses of both years.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture room in the order in which they pay their fees to the Treasurer, and each student is expected to occupy, during the session, the seat selected.

CERTIFICATES OF ATTENDANCE.

When a person is connected with the school for a period not entitling him to graduate, he may, on application to the Dean of the Faculty, receive an official certificate of attendance, which states the time of his attendance and the degree of his attainments.

REQUIREMENTS FOR GRADUATION.

I. BACHELOR OF LAWS.

The degree of Bachelor of Laws will be conferred upon such students as shall pursue the full course of two years in this Department, and pass an approved oral and written examination. It will also be conferred upon those who, having attended another law school for a period equal to one year of our course, or practiced law for one

term under a license from the highest court of general jurisdiction in any State, where the requirements for admission to the bar are equal to those in Michigan, shall also pursue one year's course in this Department and pass a like examination.

Special cases depending on previous reading in a law office for a considerable period will be decided by the Faculty on application accompanied by a showing of the facts.

Each candidate for a degree will be required to prepare and deposit with the Faculty, before the commencement of the second semester of his senior year, a dissertation, not less than forty folios in length, upon some legal topic selected by himself. The dissertation must be satisfactory in matter, form, and style; and the student presenting it will be examined upon it.

The Faculty require that the theses shall be printed on a type-writer, or otherwise, and bound, and left with the Department. Special rates can be obtained for doing this work, and two or three dollars will cover the expense of printing and binding. In special cases the Faculty will not insist on this being done, if it should appear to be a burden to a needy student.

II. MASTER OF LAWS.

The conditions on which the degree of Master of Laws is conferred may be found on page 123.

MASTER'S DEGREE IN ARTS AND SCIENCE.

Any graduate of the Department of Literature, Science, and the Arts, who is pursuing professional studies in the Department of Law, may, upon proper application to the Law Faculty, and to the Faculty of the Department of Literature, Science, and the Arts, be permitted to become at the same time a candidate for the degree of Master of Arts, Master of Science, Master of Philosophy, or Master of Letters, as the case may be, on condition that his term of residence and study covers two years before he can be admitted to an examination for such a degree. The privilege thus extended to graduates of this University is also extended to graduates of other colleges who can satisfy the Faculty of the Department of Literature, Science, and the Arts, that the courses of study for which they obtained their first degree are equivalent to the courses of study required for the corresponding degree at this University.

Useful and desirable opportunities are thus afforded to college graduates who wish to study law and at the same time to supplement their professional studies with a broader knowledge of some of the branches taught in the Department of Literature, Science, and the Arts. They are thereby enabled to enlarge their acquisitions in such branches as will be helpful to them in their professional work.

It is understood, however, that on complaint of unsatisfactory work in this Department, the Law Faculty will require students of law to discontinue their studies for the Master's degree.

THE LAW LIBRARY.

The Law Library contains 10,208 volumes, and includes the reports of every State in the Union, the reports of the Federal courts, and a very excellent collection of the English, Irish, and Canadian reports. In addition to the reports is an extensive collection of treatises on American and English law, and copies of the statutes of the several States and of the United States. The library is kept supplied with new reports as they are issued, and in this way it is made as good a working library for students as could be desired.

It is open for consultation by students from 8 o'clock a. m. to 12 m., and from 1.30 p. m. to 5.30 p. m., as well as from 7 p. m. to 9 p. m. during the academic year. It is closed on Saturday afternoons and evenings. Students are not permitted to take the books from the library building, but during the hours named are allowed free access to them.

The Honorable C. H. Buhl, of Detroit, has presented to the Law Department of the University what is known as the "Buhl Law Library," consisting of 5,000 volumes of reports and text-books. This generous gift has made the Law Library a most excellent one in which to pursue an extended study of jurisprudence.

The Library was enriched some years ago by the gift of the valuable law library of the Honorable Richard Fletcher, formerly one of the Justices of the Supreme Court of Massachusetts.

The Journal of Jurisprudence (Edinburgh), the Law Quarterly Review (London), the American Law Review, the American Law Register, the Criminal Law Magazine, the Albany Law Journal, the

Central Law Journal, and the Federal Reporter, are regularly taken and kept on file.

Students of the Department of Law are also allowed the use of the General Library of the University, which contains 59,735 volumes, and 14,708 unbound pamphlets. See page 18.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Text-books and books of reference are very numerous, and students will find the professors ready to lend them aid in making proper selections. While several copies of each of the leading text-books will be found in the library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. They will find that it will greatly facilitate their studies to have at hand at all times such of the leading text-books as treat of the more important branches of law. It is also advisable for them, when able to do so, to provide themselves with a copy of the statutes of their State. By so doing no loss will be incurred, as the books will be found essential in subsequent practice. But the only books students are required to provide themselves with are those already named as being used for purposes of text-book instruction.

The books mentioned in the following list may be used to advantage upon the subjects named. As a general thing any one of those mentioned in each department will answer the necessities of the student, and, whenever a preference exists, it is given to the one first in order on the list. But in the department of constitutional history all the writers named may be read, or consulted, as for the most part covering different periods of time.

Constitutional History.—Hallam's Constitutional History of England (1485-1760); May's Constitutional History of England (1760-1870); Yonge's Constitutional History of England (1760-1860); Stubbs's Constitutional History of England; Bagehot's English Constitution; Fischel's English Constitution; Cox's English Institutions; Curtis's History of the Constitution of the United States; Bancroft's History of the Constitution of the United States; Von Holst's Constitutional History of the United States.

Constitutional and Statute Law.—Cooley's Principles of Constitutional Law; Cooley's Constitutional Limitations; Story's Commentaries on the Constitution of the United States; Dicey's Law of the Constitution (of England); Sedgwick on Constitutional and Statutory Law; Jameson's

Constitutional Convention; Bishop's Written Law; Maxwell on the Interpretation of Statutes.

Jurisprudence.—Holland's Elements of Jurisprudence; Austin's Lectures on Jurisprudence; Lorimer's Principles of Jurisprudence; Amos on the Science of Law.

International Law.—Wheaton's Elements of International Law; Philimore's International Law; Woolsey's Introduction to International Law; Hall's International Law; Story's Conflict of Laws; Wharton's Conflict of Laws.

Roman Law.—Morey's Outlines of Roman Law; Hadley's Introduction to Roman Law; Mackeldey's Roman Law; Mackenzie's Roman Law.

Contracts.—Parsons; Anson; Metcalf; Pollock; Bishop.

Bailments.—Schouler; Edwards; Story.

Sales.—Benjamin.

Domestic Relations.—Schouler or Reeves on the Domestic Relations; Schouler on Husband and Wife; Bishop on Marriage and Divorce; Bishop on Married Women; Cord on Married Women; Macdonnell on Master and Servant; Simpson on Infants.

Corporations.—Angell; Ames; Field; Morawetz; Taylor; Dillon on Municipal Corporations; Thompson on Liability of Stockholders.

Bills and Notes.—Byles; Chalmers; Parsons; Daniel on Negotiable Instruments.

Torts.—Cooley; Bigelow; Addison.

Evidence.—Greenleaf on Evidence; Best's Principles of Evidence; Stephen's Digest of Law of Evidence; Wharton, or Starkie, on Evidence; Rogers on Expert Testimony.

Real Property.—Williams; Washburn; Tiedeman; Boone.

Partnership.—Lindley; Parsons.

Wills and Administration of Estates.—Jarman on Wills (Randolph & Talcott, or Bigelow's edition); Redfield on Wills; Hawkins on Construction of Wills; Williams on Executors.

Common Carriers.—Hutchinson on Carriers; Thompson on Passenger Carriers; Redfield, or Pierce, on Railways.

Equity.—Pomeroy's, or Story's, Equity Jurisprudence; Snell's, Bisham's, or Adams's Equity.

Criminal Law.—Bishop; Wharton; Harris; May; Washburn; Stephen's Digest of the Criminal Law; Stephen's History of the Criminal Law.

Pleading.—Stephen; Gould; Chitty; Bliss on Code Pleading; Story's Equity Pleading; Pomeroy on Remedial Rights.

Agency.—Evans; Story; Wharton.

Damages.—Sutherland.

Mortgages.—Jones.

Insurance.—May on Insurance; Wood on Fire Insurance; Bliss on Life Insurance; Arnold on Marine Insurance.

Shipping and Admiralty.—Parsons; Machlachlan; Abbott; Desty.

Easements.—Goddard; Washburn.

Taxation.—Cooley; Burroughs; Desty.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

The matriculation fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual fee is paid at the beginning of the first year, and of every subsequent year of attendance. For other details of expenses, see pages 29 to 31.

Those who desire any further information concerning this Department may address letters of inquiry to the Dean of the Department of Law, Ann Arbor, Michigan.

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

School of Pharmacy.

The School of Pharmacy gives training for all branches of pharmacy and for various chemical pursuits of the present time. It makes a well grounded preparation for service as a manufacturing chemist or as an analyst. The graduate is assured a thorough qualification for the prescription table, and for the most responsible positions in pharmacy. He is fitted to act as the chemist of the medical profession. In respect to the discipline of both the intellectual and the executive powers, the work of the School offers decided advantages, in the steady requirement of severe studies, and of exact operations, on the part of each student.

The school year begins October 1, for all students; and closes on Commencement day, the Thursday following the last Wednesday in June. Students of the first year are released the second Friday before Commencement. For special purposes admission may be granted at the beginning of the second semester, February 22, 1892. For the full regular work admission cannot be granted at any other time than at the opening of the first or the second semester, as students are instructed in classes in progressive order. For investigations, students can be received at any time when there is room in the laboratories.

REQUIREMENTS FOR ADMISSION.

All applicants for admission must be at least eighteen years of age.

It is advisory to obtain at least a year of practical training in a drug store before entering the college course in pharmacy. The required work in the School leaves the student no time for any engagement in a drug store during the college year.

Applicants who bring diplomas of graduation from standard high schools, or certificates of good standing in institutions of the collegiate grade, are admitted without examination.

Applicants who bring evidence of having been engaged in the practice of pharmacy for at least two years may be admitted upon examination in the following branches:

1. **ENGLISH.**—Each candidate will be examined as to his ability to write English, correct in orthography, punctuation, the use of capitals, grammatical construction, and rhetorical fitness.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures. *Algebra.*—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

3. **LATIN.**—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book. Instead of Latin, GERMAN to the extent of a full year's study will be accepted. Those who have a speaking and reading acquaintance with German will be held to an examination in the grammar.

Persons over nineteen years of age who bring evidence of having been engaged in the practice of pharmacy, in some capacity, for at least two years, may be admitted (for a part or the whole of the course) upon passing the examination in English; but they shall not be eligible for graduation until they have passed the other examinations described in the preceding paragraphs.

Other applicants will be examined in the following branches.

1. **ENGLISH.**—The same as given above.

2. **MATHEMATICS.**—*Arithmetic.*—The same as given above. *Algebra.*—The same as given above. *Geometry.*—The Elements of Plane Geometry, as given in Olney's New Elementary Geometry, or an equivalent in other authors.

3. **LATIN OR GERMAN.**—The applicant may offer (1) three years of preparation in Latin; or (2) two years in Latin and one year in German; or (3) one year in Latin and two years in German. Those who offer three years in Latin will be examined in the *Grammar*—a thorough preparation in the elements; in *Prose Composition*—Jones's Exercises in Latin Prose Composition, or an equivalent in some other text-book; and in *Reading*—four books of Caesar's Commentaries, and six select Orations of Cicero, or an equivalent amount in some other text-book. Those who offer two years of Latin will be examined as above, except in the Orations of Cicero. Those who offer one year of Latin will be examined in an amount equivalent to Jones's First Latin Book. Those who offer one year of German should have had daily recitations on the Grammar during that time, accompanied by weekly exercises in writing, and the reading of seventy-five pages of some German Reader. Those who offer two years of Ger-

man should have devoted one year to the reading of some complete work of literary art.

4. **PHYSICS.**—Avery's Natural Philosophy, or an equivalent.

5. **BOTANY.**—The elements of Vegetable Anatomy and Physiology, as given in Gray's Lessons, and an analysis and written description of fifty species of phanerogams.

Applicants whose preparatory course of study has not conformed precisely to the requirements above enumerated will be allowed to offer, in place of a portion of these requirements, an equivalent amount in similar branches of study; and if they show, by examination, or by other evidence, that the work in these branches has been sufficient in amount, such branches will be accepted as a substitute for those omitted.

TIMES OF EXAMINATIONS.

An examination for admission will be held on Friday and Saturday, June 12 and 13, 1891, and another on Tuesday and Wednesday, September 29 and 30. The examination will begin in each case at 9 A. M., on the first of the two days mentioned. Candidates may take their examination at either of these times, as they prefer.

COURSES OF INSTRUCTION.

STUDIES OF THE FIRST YEAR.

1. *Pharmacy.*—History of pharmacopœias; metrology and chemical problems; operative pharmacy and its physical principles; the galenical preparations; official standards and purity; heat and its uses.

2. *Inorganic Chemistry and Chemical Physics.*—Lectures with experimental illustrations, and recitations.

3. *Botany and Microscopy.*—Systems of plants and plant structure, with drawings from the microscope by the student; the identification of powders, and detection of adulterations.

4. *Pharmacognosy.*—The recognition of chemicals, crude drugs, and preparations, all in the hands of the student.

5. *Qualitative Chemical Analysis.*—Preparatory work on chemical notation, solubilities, formation of compounds, and chemical equations. A series of analyses, and the study of oxidation and reduction with notation by negative and positive bonds.

6. *Pharmacopœial Preparations.*—The minor operations of pharmacy; production of the galenicals, solid and fluid extracts, and scale preparations; chemicals, distillations, and organic syntheses; extemporaneous pharmacy.

STUDIES OF THE SECOND YEAR.

7. *Materia Medica*.—Medicines, their classification, history, physiological effect, and doses. Prescription writing, language, and latinity; prescription reading from actual files of the pharmacy.

8. *Practical Pharmacognosy*.—Recognition of crude drugs, chemicals, and preparations, in the hands of the student.

9. *Prescription Practice*.—The preparation of prescriptions made in the University Hospital.

10. *Crystallography*.—Systematic crystallography applied to the recognition of chemicals.

11. *Organic Chemistry*.—The systematic chemistry of the carbon compounds, with experimental illustrations.

12. *Quantitative Chemical Analysis*.—(1) Specific gravity; (2) volumetric determinations; (3) gravimetric determinations; (4) gravimetric separations.

13. *Proximate Organic Analysis*.—Tests of identity; methods of separation; analysis of "secret medicines"; drug assays; valuation of foods; toxicology and analyses for evidences of poisoning.

14. *Pharmacy*.—Of inorganic and organic materials, in commercial sources, manufacture, uses, tests, and standards of strength and purity.

15. *Analysis of Urine*.—Normal and abnormal, by chemical, microscopical, and volumetric methods. Physiological and pathological indications. Elective.

SCHEDULE OF HOURS.

FIRST YEAR.

FIRST SEMESTER.

8 $\frac{1}{2}$ to 9 $\frac{1}{4}$ Daily.	Course 5. Recitations and lectures.
9 $\frac{1}{2}$ to 10 $\frac{1}{4}$ Daily.	Course 2. Lectures.
10 $\frac{1}{2}$ to 11 $\frac{1}{4}$ Wednesday and Friday.	Course 4. Recitations.
1 to 5 Daily.	Course 5. Laboratory.
5 to 6 Daily.	Course 1. Lectures.

SECOND SEMESTER.

8 $\frac{1}{2}$ to 9 $\frac{1}{4}$ Monday, Tuesday, Wednesday, Thursday.	} Course 3. Laboratory.
9 $\frac{1}{2}$ to 10 $\frac{1}{4}$ Monday, Wednesday, Thursday, Friday.	
9 $\frac{1}{2}$ to 10 $\frac{1}{4}$ Tuesday.	} Course 3. Lectures.
10 $\frac{1}{2}$ to 11 $\frac{1}{4}$ Wednesday.	
10 $\frac{1}{2}$ to 11 $\frac{1}{4}$ Monday, Friday.	Course 4. Recitations.
10 $\frac{1}{2}$ to 11 $\frac{1}{4}$ Tuesday, Thursday.	Course 2. Lectures.
11 $\frac{1}{2}$ to 12 $\frac{1}{4}$ Daily.	Course 1. Lectures.
1 $\frac{1}{2}$ to 5 $\frac{1}{4}$ Daily.	Course 6. Laboratory.

SECOND YEAR.

FIRST SEMESTER.

9½ to 10½ Daily.	Course 14. Lectures.
10½ to 11½ Daily.	Course 11. Lectures.
11½ to 12½ Tuesday, Thursday.	Course 12. Lectures.
8½ to 9½ Tuesday, Wednesday, Thursday.	Course 10. Lectures.
1½ to 5 Daily.	Course 12. Laboratory.
5 to 6 Daily.	Course 9. Hospital.

SECOND SEMESTER.

8½ to 10½ Daily.	Thesis. Library.
10½ to 11½ Tuesday, Thursday.	Course 8. Recitations.
10½ to 11½ Wednesday, Friday.	Course 13. Lectures.
11½ to 12½ Daily.	Course 7. Recitations.
1½ to 5 Daily.	Course 13. } Laboratory.
	Thesis. }
5 to 6 Daily.	Course 9. Hospital.

SELECTED STUDIES.

Students are received for special lines of technical training, with liberty to take such branches as shall be found profitable to them. All branches of analytical chemistry are open to such as are prepared to take them.

EXAMINATIONS.

In each of the courses of instruction enumerated (1 to 15) an examination is held at the time the work is completed by the class. The result is reported to the Faculty, and each student enrolled in the class is recorded as Passed, Conditionally Passed, Provisionally Passed, Not Passed, or Absent. The record is not based wholly upon the examination, but upon (1) standing in recitations through the course, (2) diligence and success in the laboratory work, and (3) standing in the examinations. If "Passed" the student receives credit for the completion of the study reported upon. If "Conditionally Passed," he must make up the condition imposed. A record of "Not Passed" requires the student to go over the regular exercises of the study again. A student "Provisionally Passed" is transferred from the immediate charge of the instructor to that of the Faculty, who will withhold credit until better scholarship is attained in other studies. A record of Provisionally Passed may be changed by the Faculty to a record of Passed, Conditionally Passed, or Not Passed, whenever such change shall be justified by the scholarship of the

student in his studies in the school. Whenever the Faculty is satisfied that a student does not fulfill the purpose of his studies, he is informed, and his parents or guardians are advised that he should leave the school. If the advice be not regarded it becomes the duty of the Faculty to take mandatory action.

REQUIREMENTS FOR GRADUATION.

The degree of Pharmaceutical Chemist is conferred upon students who have completed the courses of required study, have obtained credit for examinations in these courses in the manner above stated, and have presented a satisfactory thesis.

The thesis must embody the results of research by the student under the direction of the Faculty. The subject is to be selected as early as the first of March. The investigations may consist in the determination of constants of nature, the correction of chemical formulæ and reactions, the chemical and microbotanical analysis of plants, the trial of methods of analysis or manufacture, the exposure of adulterations and concealed constituents, the collection of a cabinet, the compilation of a bibliographic index, or research in any branch of pharmaceutical chemistry. A comparison of authorities must be made, and the references given.

Experience in the business of pharmacy is not made a requirement for a degree. A year of pharmaceutical experience after college is worth several years of the same before college. But until experience be obtained, the graduate in pharmacy is not fully ready for responsible service in commercial practice.

Post-Graduate Studies and a Higher Degree.

Extended facilities for advanced studies under instruction are given to graduates who take an additional year in the school. These facilities are adapted to preparation for service in manufacturing chemistry and pharmacy, or in any branch of analytical chemistry. The student elects such laboratory courses and other studies as will be most helpful to him in responsibilities for which he desires to be qualified. Additional study in the Department of Literature, Science, and the Arts may be elected, if the Faculty find such elective work advisory. (See page 65 for the courses in analytical and organic

chemistry given in that department.) The following are among the available courses open to graduates:

1. *Quantitative Analysis*.—Advanced quantitative work in any direction. Iron and steel analysis, valuation of fertilizers, mineral waters, brines, etc.

2. *Organic Analysis*.—Proximate analysis, detection of adulterations, assays of drugs, valuation of foods, sanitary chemistry—laboratory work and reading in the library. Ultimate organic analysis and preparations—an organized course.

3. *Purification of Chemicals*.—An organized course of laboratory work, furnishing pure chemicals for use.

4. *Physiological Chemistry*.—A laboratory course. *Pharmacology*.—Experimental work.

5. *Assaying of Ores*.—A course in class. *Metallurgy*.—Lectures. Blow-pipe analysis of minerals—a defined course.

6. *Experimental Researches*.—In manufacturing invention; in analytical methods; in pure sciences. Bibliography of pharmaceutical chemistry.

A second degree is offered to resident graduates of this School upon the following requirement, viz., the accomplishment of original research, of an extent representing the average work for a full college year, and of sufficient ability and faithfulness. Applications will be accepted by the Faculty from those who have already shown that they are adapted to engage successfully in investigations. A full record of the work, with citation of authorities, in form for publication, is required. Upon completion of the requirement, the degree of Master of Pharmacy is conferred.

TEXT-BOOKS AND BOOKS OF REFERENCE.

TEXT-BOOKS.

First Year.—In General Chemistry, Remsen. In Chemical Physics, Kiddle. In Qualitative Analysis, Prescott and Johnson. In Pharmacy, the U. S. Pharmacopœia and Remington's Practice. In Botany, Bessey. In Pharmacognosy, Maisch's Organic Materia Medica. It is very desirable to have either the National Dispensatory, or the United States Dispensatory.

Second Year.—In Materia Medica, Brunton. In Prescription Writing, Gerrish. In Quantitative Analysis, Cheever's Select Methods. In Organic Chemistry, Remsen. In Organic Analysis, Prescott. In Physiological Chemistry, Vaughan. Lyon's Pharmaceutical Assaying is advised.

Students who study in the same room may unite in the use of the dispensatory, and the other large works.

BOOKS OF REFERENCE.

These are provided in the General Library of the University, which embraces the library of the School of Pharmacy. All the important repositories of chemistry and pharmacy, including the principal periodicals in complete sets, and the latest works of reference, are accessible to the student, and are in use for original research. During the second semester, students have direct access to an alcove supplied with about seven hundred volumes of pharmaceutical literature, and other works can be obtained from the book-room by calling for them.

FEES AND EXPENSES.

For full information in regard to University fees and other expenses see pages 29 to 31.

Letters of inquiry may be addressed to the Dean of the School of Pharmacy, Ann Arbor, Michigan. A register of residences and occupations of the alumni, constituting a full professional directory, revised each year, is given in the special Annual Announcement of the School, which can be obtained on application to the Dean.

Homœopathic Medical College.

The Homœopathic Medical College was established as a Department of the University in 1875. The friends of homœopathy everywhere will be gratified to know that since the establishment of the College, wise and liberal provisions have been made by successive legislatures for its maintenance and success. The recent establishment of a chair of ophthalmology, otology, and pædology, and the appropriations made for hospital purposes (see page 29), place the College in a most encouraging and satisfactory condition. The continuous progress in the past promises to remain uninterrupted in the future.

The college year extends from the first day of October to the Thursday following the last Wednesday in June.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be at least eighteen years of age, must present to the Faculty satisfactory evidence of a good moral character, and must have sufficient primary education to make good use of the advantages offered. Graduates of any accredited college, academy, or high school, and persons who hold a teacher's certificate, qualifying them to teach in the common schools of the State in which they reside, are admitted to this College upon presentation of the proper evidence to the Secretary of the Faculty. Other applicants for admission must submit to an examination, in writing, in the branches of a common-school English education.

ADMISSION OF WOMEN.

Women are admitted to this College, as to all other departments of the University, on the same conditions as men.

TIME OF EXAMINATION.

The admission examination will be held at 2 P. M., on Wednesday, September 30, 1891. Candidates are required to present them-

selves at that time, and they are expected to be in attendance on the first day of the term, at which time the regular course of instruction will begin. To provide for cases in which it is absolutely impossible for candidates to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty; but no excuse, except of an urgent character, will be accepted for failure to appear at the first examination. Certificates of time are given only for the actual period of attendance.

Before admission to examination every student is required to present to the Secretary of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

ADMISSION TO ADVANCED STANDING.

Students who have studied medicine at some other accredited medical college for at least one college year, and who possess the proper qualifications, may be admitted to advanced standing after having passed a satisfactory examination in all the studies which have already been pursued by the class to which they seek admission. Four college courses are in all cases required for graduation and the student is most earnestly advised to spend the whole four years in this College, pursuing systematically the regular graded course.

NEW REQUIREMENTS FOR ADMISSION IN 1892.

In 1892 there will be an increase in the requirements for admission over those now in force. The details of the changes to be made are not yet ready for publication.

ASSIGNMENT OF SEATS.

Students are allowed to select seats in the lecture rooms in the order in which they pay their fees to the Treasurer, and according to the class they are to enter; and each student is expected to occupy, during the session, the seats selected. In the advanced lectures, the graduating class, by courtesy, are allowed the privilege of the

seats nearest the operating table and lecture desk. The same rule applies to the selection of seats in the Department of Medicine and Surgery.

COURSE OF INSTRUCTION.

SURGERY.—A complete course of lectures on minor surgery and bandaging is given to students of the first year.

The students of the second and third years listen together to a complete course of lectures on operative surgery, fractures, and dislocations, and on the principles of surgery.

Candidates for graduation are required to demonstrate their knowledge of operative surgery by operations on the cadaver, a requisite number being provided by the authorities without expense to the class.

The chair of surgery has an assistant, under whose direction students are allowed to make the necessary preparations for operations, and to assist, when assistance is required. Advanced students, under the immediate supervision of the surgeon in charge, are also allowed to treat patients that have been operated upon.

MATERIA MEDICA.—Throughout the college year three lectures a week are given upon materia medica and therapeutics. It is the purpose in this course to present drugs *fully*, and the therapeutic uses of them. Most particular attention is given to the science of materia medica pura and to the homœopathic use of medicine. The students prove one or more drugs upon themselves under supervision of the professor of materia medica, who afterwards discusses before the class the records of these provings.

As each student attends these lectures (three a week) throughout his college course, he is afforded an opportunity of becoming really proficient in the science of materia medica and in the principles underlying the art of therapeutics. The different classes are quizzed by the assistant to the chair of materia medica, at least once a week, upon the lectures heard during the preceding week, and each class is examined in writing at the close of each semester. The assistant gives to the freshmen some practical instruction in pharmacy.

OBSTETRICS, GYNÆCOLOGY, AND PÆDOLOGY.—The course of study in these several branches is so arranged that separate lectures

are given to the several classes in a graded course. The members of the freshman class are drilled in the fundamental branches of gynæcology, being taught the use of instruments, the various methods of making gynæcological examinations, etc. During the second year the student enters upon both didactic and clinical work. Special lectures are delivered to the senior class upon special subjects. Senior students are also required to make physical and local examinations in the sub-clinics of this department, thus familiarizing themselves with the various methods of practising touch, palpation, obstetric auscultation, etc., and utilizing to the best possible advantage the many patients availing themselves of this special department of the clinic.

OPHTHALMOLOGY, OTOTOLOGY, AND LARYNGOLOGY. — Regular lectures on these important specialties are given during the term, amply illustrated from the abundance of clinical material at the disposal of the Faculty. The eye-and-ear clinic forms one of the most interesting features of the clinical work, and affords the class every facility for a thorough practical study of all the diseases of the eye and ear which come under the observation of the physician.

Members of the senior class have cases assigned them for dressing and treatment, from time to time, and thus acquire practical skill and knowledge in diagnosis, and in the use of the various instruments.

THEORY AND PRACTICE OF MEDICINE.—The course in Theory and Practice comprises a thorough discussion of the various subjects belonging to this chair. In addition to a full consideration of those diseases which make up so large a part of the physician's general practice, it includes special courses devoted to diseases of the skin, diseases of the nervous system, and to instruction in physical diagnosis. Careful attention is also given to the study of the pathology of the various diseases considered. No pains are spared to make the student thoroughly familiar with homœopathic practice, as well as with all the latest advances in medicine.

The lectures are fully illustrated by the medical clinic, which is further utilized for giving special instruction in physical diagnosis and in the practical application of the various diagnostic instruments. Cases in the hospital are assigned, from time to time, to the care of members of the senior class, thus affording abundant opportunity for gaining bedside experience in the diagnosis and treatment of disease.

INSTITUTES OF HOMŒOPATHY.—That each student may come to understand homœopathy intelligently, the professor of materia medica at the beginning of his course devotes several lectures exclusively to the Institutes of Homœopathy; and thereafter throughout the course keeps prominent those facts (as presented by various authorities) upon which an intelligent belief in homœopathy may rest.

SPECIAL COURSES.—A special course in physiological and pathological chemistry embraces analysis of the blood, urine, gastric juice, brain, bile, bone, muscle, and other fluids and solids of the body. A course in toxicology includes qualitative and quantitative analysis, and the special examination of foods, and the tissues and fluids of poisoned animals, for the detection of the various mineral and organic poisons. Each of these courses occupies about one college year of laboratory work. Students willing to devote time to *original work* in physiological chemistry, or other branches, after due preparation, are given the fullest encouragement and co-operation. Courses in quantitative analysis and in pharmaceutical preparations are also open to those who desire such special training.

The students of the Homœopathic Medical College receive instruction, in all branches not therein provided for, from the respective professors in the Department of Medicine and Surgery, and, in those branches, are subjected to the same rules, regulations, and examinations, as the students of that Department.

Lectures are delivered daily; and frequent examinations by the assistants to the several chairs are held. The surgical, medical, gynecological, and ophthalmological clinics are held twice a week, at which times examinations of patients are made by the professors in charge, or by students under the direction of the professors, prescriptions given, and surgical operations performed in the presence of the class. Owing to the abundance of clinical material, the several clinics are held on separate days, of which the profession throughout the State will be duly notified.

INSTRUCTION FOR WOMEN.

The course of instruction for women is in all respects equal to that for men. Practical Anatomy is pursued by the two sexes in separate rooms, and some of the lectures and demonstrations, which it is not desirable to present to the two sexes together, are given to

them separately; but in most of the lectures, in public clinics, in the chemical laboratory, and in various other class exercises, it is found that both sexes may attend with propriety at the same time.

SCHEDULE OF STUDIES.

The following schedule shows the arrangement of studies for the course of four years. The subjects marked with a star (*) are not required of students who spend only three years in this College.

The subjects taught by the Faculty of the Homœopathic Medical College are marked with a dagger (†).

In the laboratory work, the classes are divided into sections of suitable size, and the statements below under the heading "Hours Required" indicate the total time required of each student, in whatever semester the work may be taken.

FIRST YEAR.

FIRST SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Osteology.	3
† Materia Medica.	3
* Analytical Chemistry.	5
Physics.	3
<i>Laboratory Work.</i>	<i>Hours Required.</i>
* Pharmacognosy.	1 to 4 P. M., twice a week for one semester.
* General Chemistry.	2 to 5 P. M., twice a week for one semester.
Qualitative Chemistry.	1 to 5 P. M., daily for one semester for four-year students, and for twelve weeks for three-year students.

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Descriptive Anatomy.	3
† Materia Medica.	3
* Analytical Chemistry.	5
* Pharmacy.	5
General Chemistry.	5
<i>Laboratory Work.</i>	
The same as in the first semester.	

SECOND YEAR.

FIRST SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Hygiene.	3
Histology.	3
Descriptive Anatomy.	2
† Therapeutics.	2
† Materia Medica.	3
General Chemistry.	4

<i>Laboratory Work.</i>	<i>Hours Required.</i>
Qualitative Chemistry.	1 to 5 P. M., daily for one semester for four-year students, and for twelve weeks for three-year students.
Practical Anatomy.	1 to 4 P. M., daily for twenty weeks.
Practical Hygiene.	1 to 5 P. M., daily for twelve weeks.
Electro-Therapeutics.	1 to 4 P. M., daily for six weeks.
Elementary Histology.	1 to 4 P. M., twice a week for the semester.

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
Physiological Chemistry.	3
Physiology.	2
Descriptive Anatomy.	2
Organic Chemistry.	3
† Therapeutics.	2
† Materia Medica.	3
Electro-Therapeutics.	2

<i>Laboratory Work.</i>	<i>Hours Required.</i>
Qualitative Chemistry.	Same as in the first semester.
Practical Anatomy.	
* Practical Hygiene.	
Electro-Therapeutics.	
* Advanced Histology.	

THIRD YEAR.

FIRST SEMESTER.

† Theory and Practice.	3
† Surgery.	3
† Diseases of Children.	2
† Diseases of Women and Obstetrics.	2
† Materia Medica.	3
Physiology.	2
Medical Jurisprudence.	1
* Meteorology and Climatology.	2

<i>Laboratory Work.</i>	<i>Hours Required.</i>
Analysis of Urine.	1 to 5 P. M., daily for twelve weeks.
* Practical Pathology.	2 to 5 P. M., daily for six weeks.
* Practical Hygiene.	1 to 5 P. M., daily for twelve weeks.
Practical Anatomy.	1 to 4 P. M., daily for twenty weeks
Optional	Advanced Hygiene. 1 to 5 P. M., daily for one semester.
	Sanitary Examination of Water. 1 to 5 P. M., daily for twelve weeks.
	Detection of Adulterations in Food and Drink. 1 to 5 P. M., daily for one semester.
	Physiological Chemistry. 1 to 5 P. M., daily for one semester.

SECOND SEMESTER.

<i>Lectures and Recitations.</i>	<i>Hours each week.</i>
† Theory and Practice.	3
† Surgery.	3
† Diseases of Women and Obstetrics.	4
† Materia Medica.	3
Embryology.	3
† Dermatology.	2
Medical Jurisprudence.	1

Laboratory Work.

- Analysis of Urine.
- *Practical Pathology.
- *Practical Hygiene.
- Practical Anatomy.
- *Practical Physiology.

Hours Required

Same as in the first semester.

1 to 5 P. M., daily for the semester.

FOURTH YEAR.**FIRST SEMESTER.****Lectures and Recitations.****Hours each week.**

- †Theory and Practice. 3
- †Surgery. 3
- †Diseases of Women and Obstetrics. 2
- †Diseases of Children. 2
- †Materia Medica. 3
- †Ophthalmology. 1
- Pathology. 2
- †Diseases of Nervous System. 2

†Laboratory Work.

- Clinical.
- Bandaging and Dressing.
- Practical Obstetrics.
- Physical Diagnosis.
- Bedside Practice.
- Surgical Anatomy.

SECOND SEMESTER.**Lectures and Recitations****Hours each week.**

- †Theory and Practice. 3
- †Surgery. 3
- †Diseases of Women and Obstetrics. 4
- †Materia Medica. 3
- †Laryngology and Otology. 2
- †Diseases of Nervous System and Insanity. 2
- Pathology. 2

†Laboratory Work.

- Clinics and Hospital Practice.

The afternoons of the fourth year are taken up with case-keeping and hospital work.

EXAMINATIONS.

At the end of each semester, written examinations are held on all subjects previously taught, and the grade of each student is entered upon the records of the Faculty. Every student who does not come up to the required standard is notified of his failure, and opportunity is given him to prepare for a second examination upon the subjects wherein he has failed, in order that he may enter upon the advanced studies of the next semester.

REQUIREMENTS FOR GRADUATION.

To be admitted to the degree of Doctor of Medicine, a student must be twenty-one years of age and possess a good moral character. He must have successfully pursued the study of medicine for the period of four years, the last of which must have been in this College. He must have attended at least seventy-five per cent. of the regular lectures, must have spent the required time in practical anatomy, chemical analysis, etc., in the various laboratories and hospitals, and must have attended the usual quizzes and drills by the assistants of the several chairs. He must also have passed satisfactory examinations on all the studies included in the curriculum.

All candidates for graduation must present to the Secretary time-certificates from the Secretary of the Faculty of the Department of Medicine and Surgery, showing what lectures they have attended in that department.

FACILITIES FOR INSTRUCTION.

The unsurpassed facilities offered by the University of Michigan for thorough study and for original work in various directions are in themselves worthy the serious consideration of all medical students.

The museums of anatomy and materia medica, comprising thousands of specimens, models, and charts, afford the best means attainable for the close study of anatomy, physiology, and pathology. The facilities for the study of chemistry, afforded by the chemical laboratory, are not excelled in any medical college in this country, and the arrangements of the laboratory work are such that medical students, in classes, and working under the direction of the professor in charge, receive practical instruction in the courses on qualitative chemistry, and in the analysis of urine, a knowledge of which has become absolutely indispensable to the successful physician. The histological laboratory, amply supplied with microscopes, sphygmographs, stereopticon, etc., offers rare facilities for the prosecution of practical work in experimental physiology and in histology. The hygienic and anatomical laboratories are models of beauty and convenience, affording facilities for instruction in hygiene and in practical anatomy, unsurpassed, if equalled, by those of any other institution of learning in the United States. In addition to these,

students have free access to the general and special cabinets of the University, containing about 255,000 specimens. The scientific and philosophical lectures, collateral to medicine, given in the Department of Literature, Science, and the Arts, are also open to them.

The Homœopathic College possesses, in addition, the valuable collection of anatomical and pathological specimens presented to it by Dr. J. N. Eckel, of San Francisco, Cal., and Dr. A. I. Sawyer, of Monroe, Mich.; this collection, already comprising much valuable material, is constantly growing in importance through contributions from friends of this institution.

The lecture room and amphitheatre are arranged conveniently, have ample seating capacity, and embody the conveniences and necessities which are essential points to the teacher and students.

The Hospital* is in charge of a competent resident medical officer and an experienced matron; it is provided with a corps of trained nurses, wards for male and female patients, special rooms for anti-septic surgery, dispensary, etc., all of these under the immediate direction of the Faculty, the members of which attend upon the sick in the hospital, and draw from them the material for the clinical instruction of the class.

The clinical advantages offered are more than ample to meet the demands of any school. Although not placed in the midst of a populous city, the College has had no difficulty in securing all the clinical material which could be utilized, embracing almost every pathological condition likely to occur in daily practice, and a great variety of rare cases and of surgical operations of unusual importance.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Any one of the following text-books in each department will answer the necessities of the student; and, wherever a preference exists, it is given to the one first in order on the list.

ANATOMY.—Gray; Leidy; Quain; Darling; Holden.

PHYSIOLOGY.—Martin; Yeo; Foster; McKendrick.

CHEMISTRY.—*General Chemistry.*—Richter's *Inorganic Chemistry*; Remsen's *Introduction to the Study of Chemistry. For Laboratory.*—

* A new hospital, which will largely improve the accommodations and supply increased facilities, is in process of erection, and will be ready for occupancy by the first of October, 1891. See, also, page 20.

Prescott's First Book in Qualitative Chemistry; Vaughan's Physiological Chemistry; Vaughan and Novy's Ptomaines and Leucomaines.

MATERIA MEDICA AND THERAPEUTICS.—Hughes's Pharmacodynamics; Hempel and Arndt's *Materia Medica and Therapeutics*; Farrington's *Clinical Materia Medica*; Hahnemann's *Materia Medica Pura* (translated by R. E. Dudgeon, M. D.).

PHARMACY.—O'Connor's American Homœopathic Pharmacopœia.

INSTITUTES OF HOMŒOPATHY.—Hahnemann's Organon (Wesselhœft's translation); Dunham's Science of Therapeutics; Ameke's History of Homœopathy; Dudgeon's Lectures on Homœopathy; Dake's Therapeutic Methods; Hughes's Knowledge of the Physician.

BOTANY.—Gray's Manual.

PATHOLOGY.—Green; Zeigler. *For Reference.*—Hamilton; Payne. *For Laboratory.*—Gibbes's Practical Histology and Pathology.

DISEASES OF WOMEN.—Southwick; Ludlam; Cowperthwaite; Skene; Hart and Barbour; Byford; Goodell.

OBSTETRICS.—Guernsey; Leavitt; Lusk; Parvin; Galabin; Playfair. *For Reference.*—Cazeaux and Tarnier.

DISEASES OF CHILDREN.—Eustace Smith; Hartmann; Teste; Edmunds; Ashby and Wright. *Special Subjects.*—Eustace Smith on the Wasting Diseases of Infancy and Childhood; West on the Nervous Diseases of Childhood; Routh on Infant Feeding.

THEORY AND PRACTICE.—Arndt's System of Medicine; Raue; Dickinson; Hughes's Manual of Therapeutics; Lilienthal's Therapeutics; Baehr's Therapeutics; Da Costa on Medical Diagnosis; Clapp on Auscultation and Percussion; Loomis on Physical Diagnosis; Bulkley's Hand-book of Skin Diseases.

SURGERY.—Helmuth; Walsham; Erichsen; Druitt; Hamilton; Stimpson. *Special Subjects.*—Hamilton on Fractures and Dislocations; Keyes on Venereal Diseases; Sayre on Club Foot; Otis on the Genito-Urinary Diseases; Ranney on Surgical Diagnosis. *Minor Surgery and Surgical Appliances.*—Wales; Hamilton; Heath.

OPHTHALMOLOGY AND OTOTOLOGY.—*On the Eye.*—Juler; Norton's Ophthalmic Therapeutics; Buffum; Swanzy; Berry; Angell; Dewecker; Alt. *On the Ear.*—Winslow; Houghton; Sterling; Roosa; Burnett; Hartmann; Politzer.

URINARY PHYSIOLOGY AND PATHOLOGY.—Vaughan; Hassall; Beale; Parkes; Thudichum; Neubauer; Vogel.

HISTOLOGY.—Schäfer's Essentials of Histology; Klein's Elements of Histology. *For Reference.*—Klein's Atlas of Histology; Toldt's *Lehrbuch der Histologie*.

PHYSIOLOGICAL CHEMISTRY.—Brunton's Hand-book for the Physiological Laboratory; Thudichum's Manual of Chemical Physiology.—*For Reference.*—Lehmann's Physiological Chemistry.

ELECTRO-THERAPEUTICS AND ELECTRO-SURGERY.—King; Beard and Rockwell; Butler;

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

MATERIAL FOR DISSECTION.—A charge of *ten dollars* an extremity is made for material used in dissection.

LABORATORY EXPENSES.—These vary with the prudence and economy of the student. For all the courses in the chemical laboratory the average expense to medical students has been, for several years past, about *twenty dollars*. A charge of *three dollars* is made for material used in the histological laboratory. A charge of *five dollars* is made in the pathological laboratory for material used in the combined courses of pathology and bacteriology. A charge of *one dollar* is made to students who take the course in electro-therapeutics.

A graduate of any respectable and recognized medical college, who may desire to attend this College, is permitted such attendance on the payment of the matriculation fee only.

TABLE OF FEES.

College Fees, first year.....	For Michigan Students, \$	35	For all others, \$	60
“ “ second year.....	“ “ “	25	“ “ “	35
“ “ third year.....	“ “ “	25	“ “ “	35
“ “ fourth year.....	“ “ “	25	“ “ “	35
Total Fees for four years.....	“ “ “	\$ 110	“ “ “	\$ 155
Diploma Fee.....	“ “ “	10	“ “ “	10
Material for Dissection.....	“ “ “	20	“ “ “	20
Laboratory Expenses.....	“ “ “	about 24	“ “ “	about 24

For additional information in regard to expenses, see pages 29 to 31.

Students arriving at Ann Arbor, and desiring further information, should apply at the office of the Faculty, in the Homœopathic Hospital, North University Avenue. The office will be open daily during the last week in September, and members of the Faculty, or the

*The Matriculation Fee and the Annual Fee must be paid in advance, and no student can select his seat until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents. The Matriculation Fee is paid but once, and entitles the student to the privileges of permanent membership in the University.

Resident Surgeon, will be in attendance. The office hours of the Dean are from 9 to 11 A. M.; of the Secretary from 3 to 5 P. M.

All letters of inquiry should be addressed to Dr. Daniel A. McLachlan, Secretary of the Homœopathic Medical College, Ann Arbor, Michigan.

College of Dental Surgery.

The College of Dental Surgery was established as a department of the University in 1875. The college year begins October 1, and continues till the Thursday following the last Wednesday of June. There is a Thanksgiving recess of three days, a vacation of two weeks at the Christmas holidays, and a recess of one week in the month of April. The lectures close about June 15, in order to allow time for the final examinations before Commencement.

REQUIREMENTS FOR ADMISSION.

Every candidate for admission must be eighteen years of age, and present to the Faculty satisfactory evidence of a good moral character. Unless already a matriculate of the University, or a graduate of some recognized college, academy, or high school, every candidate must be examined as to his previous education and his fitness to enter upon the technical study of dentistry. The examination will be chiefly in writing, and will embrace the usual branches of an English education. In order to secure release from this examination, the candidate must present his diploma or certificate of graduation. A knowledge of languages other than English is not required, but a limited acquaintance with Latin and Greek would be exceedingly useful to the student as an aid in comprehending scientific terms, which are largely of Latin or Greek origin. Students contemplating a course of dental study would derive great benefit even from a few months of study, under an instructor, of the Latin and Greek grammars.

The examination will be held in Ann Arbor on Wednesday, September 30, 1891, at 2 P. M. Candidates are expected to be present at that time. To provide for cases in which it is impossible for the appli-

want to be present, other examinations will be held at such times as may be determined by the Faculty.

In order to receive credit for a full course, students must enter not later than October 15.

Before admission to examination every student is required to present to the Dean of the Faculty the Treasurer's receipt for the payment of the matriculation fee and the annual fee. It will therefore be necessary for the candidate to apply first to the Steward at his office in University Hall, register his name as a student in this College, and pay his fee to the Treasurer. In case of rejection, the money paid preliminary to examination will be refunded.

Admission examinations are also conducted, at any time designated by the examiners between June 1 and September 20 of each year, at the places and by the persons named below.

Dr. Wm. Mitchell, No. 39 Upper Brook St., London W., England.

Dr. J. G. Friederichs, No. 155 St. Charles St., New Orleans, La.

Dr. J. G. Templeton, 299 Penn Ave., Pittsburgh, Pa.

Dr. Victor H Jackson, 6 E. 126th St., New York, N. Y.

Dr. John W. Gale, Canandaigua, N. Y.

Dr. C. T. Stockwell, 327 Main St., Springfield, Mass.

Dr. Alfred W. Hoyt, 243 State St., Chicago, Ill.

Dr. Immer C. St. John, Minneapolis, Minn.

Dr. T. J. Hill, Fargo, Dakota.

Dr. W. J. Younger, San Francisco, Cal.

Dr. J. Taft, 122 W. 7th St., Cincinnati, O.

Students are allowed to select seats in the lecture rooms and places in the dental laboratory in the order in which they matriculate; and each student is expected to occupy the seat selected during the session.

NEW REQUIREMENTS IN 1892 AND THEREAFTER.

For students entering after July 1, 1892, the requirements will be as follows:

1. **ENGLISH.**—(a) A grammatical and rhetorical analysis of short selections in prose and poetry. The rhetorical analysis will be confined chiefly to the meanings and forms of words, sentential structure, paragraphing, and figures of speech. (b) An essay of not less than two pages (foolscap) correct in spelling, punctuation, capital letters, grammar, sentential structure, and paragraphing.

2. **MATHEMATICS.**—*Arithmetic.*—Fundamental Rules, Fractions (Common and Decimal), Denominate Numbers, Percentage, Proportion, Involution and Evolution, and the Metric System of Weights and Measures.

Algebra.—Fundamental Rules, Fractions, Equations of the first degree, containing two or more unknown quantities.

Geometry.—Plane Geometry.

3. *PHYSICS*.—An amount represented by Avery's Natural Philosophy, or Gage's Introduction to Physical Science.

4. *BOTANY*.—The elements of Vegetable Anatomy and Physiology as given in Gray's Lessons.

5. *ZOOLOGY*.—Packard's Zoölogy, briefer course.

6. *PHYSIOLOGY*.—Martin's The Human Body, briefer course.

7. *HISTORY*.—Myers's General History, or an equivalent; and Higginson's, or Johnston's, History of the United States.

8. *LATIN*.—Jones's First Latin Book, or Harkness's Latin Reader, or an equivalent amount in any other text-book.

COURSE OF INSTRUCTION.

In the arrangement of the course of study it is the aim to make it such as will meet the requirements of the student and the expectations of the profession, and secure the greatest benefit to the public. It is generally conceded that graded and progressive work secures the best results in education. To meet the requirements of the constantly increasing demands of dental science, and to accommodate and benefit those students who desire a thorough dental education, the course of instruction has recently been extended to three college years, of nine months each. This extension of the course has been adopted in order that time and opportunity may be had for more systematic and thorough work in all branches of science now taught in dental schools, and, in addition, the collateral medical and scientific studies made necessary by the rapid progress and high attainments of the science of dentistry; and also that a more satisfactory grading of the classes may be secured.

In the arrangement of the work a graded course of study is combined with repetition of the more important lectures, thus obviating the objection of dismissing one part of a subject before its relations to other parts can be seen and appreciated, and also avoiding the confusion incident to the presentation of too many parts of the general subject, at the same time, to the mind of the student at an early period of his studies.

The extended course affords time for the teaching and study of subjects not generally taught, or but very imperfectly, in many dental

schools; and especially does it give more time for thorough work in the laboratories. Though not fully covering the defects of preliminary education, this extended course, accompanied by repeated examinations and written exercises, remedies some deficiencies of earlier training, and is of itself an efficient means of mental discipline, and of literary as well as scientific culture.

SCHEDULE OF STUDIES.

FIRST YEAR.

FIRST SEMESTER.

<i>Subjects.</i>	<i>Hours each week.</i>
Osteology.	3
Materia Medica.	3
Analytical Chemistry (laboratory and lectures).	18
Dental Laboratory Practice.	10
Prosthetic Dentistry (lectures).	1

SECOND SEMESTER.

<i>Subjects.</i>	<i>Hours each week.</i>
Descriptive Anatomy.	3
Materia Medica.	3
Special Dental and Practical Anatomy.	18
Dental Laboratory Practice.	10
Prosthetic Dentistry (lectures).	1

SECOND YEAR.

FIRST SEMESTER.

<i>Subjects.</i>	<i>Hours each week.</i>
Descriptive Anatomy.	2
Histology (laboratory and lectures).	9
Comparative Dental Anatomy.	2
Bacteriology.	3
Prosthetic Dentistry.	16
Operative Dentistry (lectures).	3

SECOND SEMESTER.

<i>Subjects.</i>	<i>Hours each week.</i>
Physiology.	3
Physiological Chemistry.	3
Organic Chemistry.	3
Prosthetic Dentistry.	16
Operative Dentistry (lectures).	3

THIRD YEAR.

<i>Subjects.</i>	<i>Hours each week.</i>
Operative Dentistry.	3
Clinical Operative Dentistry.	15
Oral Pathology and Surgery.	2
Dental Materia Medica and Therapeutics.	2
Laboratory Practice in crown and bridge work, and in construction of regulating devices, instruments, and appliances for clinical dentistry.	10

All students of the first and second years are obliged to pass an examination on the required branches of their respective courses, before leaving the College at the end of the term. This examination is held between the first and fifteenth of June, each year, and no student who has failed to pass two of the required branches in his course, at this examination, is admitted to an advanced class during the first semester of the following year. No standing is given or certificate issued to any one who has failed to pass any of these examinations. Certificates of time are given for the actual period of attendance only.

Anatomy is studied didactically and practically. A full course on general anatomy is taken with the medical classes in the Department of Medicine and Surgery. Special instruction is also given in the anatomy and histology of all that pertains to the oral apparatus, embracing also particular attention to *comparative dental anatomy*.

In the histological laboratory the student not only acquires a knowledge of the principal structures and tissues of the animal body, but also becomes familiar with the workings and uses of the microscope.

In chemistry, students are required to attend lectures on general chemistry, and also to take a course in analytical chemistry with special reference to those agents or secretions that concern their future needs. A course in the analysis of saliva is optional.

The course on the theory and practice of dentistry embraces the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation as well as restoration to health when diseased. This instruction applies not only to the various affections of the teeth and contiguous parts, but to the character and application of remedial agents, and to the various approved methods of operating, with all the details of conditions, materials, instruments, and appliances.

Provision is also made for the treatment of all pathological conditions of the mouth and associated parts, including such surgical operations as may be necessary, the administering of anæsthetics, extraction of teeth, the treatment of diseased and irregular teeth, analysis of the secretions of the mouth, etc.

In clinical dentistry the most thorough practical instruction in details of operations, and in the preparation of instruments and appliances used, is given. The rooms are well arranged, and supplied with operating chairs and other requisite facilities. Each member of the senior class must provide himself with a dental engine and such other instruments and appliances as may be needed. He is required to spend a part of each day in the clinic room.

The instruction in prosthetic dentistry embraces everything necessary to enable the dentist successfully to supply substitutes for lost dental organs. Special reference is had to the principles involved in the restoration of the natural functions of the teeth, viz., mastication, speech, and expression of features, keeping in view always the health and future usefulness of the living parts. Practical and valuable modes only are taught.

REQUIREMENTS FOR GRADUATION.

The candidate for graduation must be twenty-one years of age; must possess a good moral character; must have devoted three years to the study of dentistry, and have made such attainments in all the branches of the course of study, as shall be satisfactory to the Faculty; and must have attended three full courses of lectures in this College. It is recommended that he attend these consecutively.

One course in any other dental college having an equal or similar standard of requirements to this, will be accepted as an equivalent of one course here. But all applicants offering such an equivalent shall, at the option of the Faculty, submit to an examination.

A graduate of the Department of Medicine and Surgery may enter this College, and, if found qualified, may graduate after two years have been devoted to the study of dentistry, including the courses of lectures.

At least one year's continuous study and work will be required of all candidates for a degree upon a post-graduate course.

Every candidate will be required to write from time to time upon the various branches of his course, and may at the discretion of the Faculty be required to prepare a thesis upon some assigned topic; he must present for inspection practical operations performed by himself in this College, and give satisfactory evidence of his skill and ability as a practitioner.

Under the provisions of the "Dentists Act" of Great Britain, graduates of this College, who are not British subjects, are allowed by the General Medical Council to register and to practice dentistry in that country, without further examination.

FACILITIES FOR INSTRUCTION.

A description of some of the libraries, museums, and laboratories belonging to the University, all of which are open to students of this College, may be found on pages 18 to 29. The laboratories chiefly used by students of medicine are described on pages 112 to 115. Among the facilities of special interest to students of dentistry the following may be mentioned:

DENTAL MUSEUM.

The Dental Museum is supplied with a large number of anatomical, physiological, pathological, and histological preparations, including a series illustrating dentition from infancy to the completion of the process in the adult, and the normal changes through life to old age, and also illustrative of the dental and osseous tissues. Preparations, natural and artificial, greatly facilitate the study of the nervous and vascular systems. The design is to make every practicable appliance in this direction available.

LABORATORY OF MECHANICAL DENTISTRY.

This laboratory has been fitted up especially for students in the College of Dental Surgery. It contains eight charcoal and coke furnaces; also, sand-tables, rolling-mills, and other appliances for the various manipulations of prosthetic dentistry, such as the construction of artificial dentures in gold, continuous gum, silver, aluminum, and other bases; appliances for the regulation of teeth, the mechanical treatment of oral deformities, and the construction of instruments. The laboratory has accommodations for fifty students at a time.

Particular attention is given to the manipulation and management of the precious metals with reference to their use for dental purposes.

DENTAL LIBRARY.

A library of dental science, containing almost every known work on this specialty, including an almost complete file of every Dental Journal published, is shelved in the dental building, where it is accessible to all students.

COURSES IN OTHER DEPARTMENTS.

Those who can command the time may also avail themselves of numerous lectures, or pursue elective studies, in the Department of Lit-

erature, Science, and the Arts; or may attend special lectures in the Department of Medicine and Surgery, such as those on gynæcology, and the diseases of children, or on other subjects that are of importance to the practising dentist.

TEXT-BOOKS.

ANATOMY.—Gray; Tomes.

PROSTHETIC DENTISTRY.—Richardson.

PHYSIOLOGY.—Martin; Foster.

ORAL DEFORMITIES.—Kingsley; Talbott; Guilford.

HISTOLOGY.—Schäfer; Klein.

CHEMISTRY.—Miller; Mitchell.

PATHOLOGY.—Green.

PRACTICAL CHEMISTRY.—Prescott.

DENTAL PATHOLOGY.—Wedl; Ingersol.

THERAPEUTICS.—Gorgas; Bartholow; Wood.

ORAL SURGERY.—Garretson; Tomes.

MEDICAL DICTIONARY.—Thomas.

OPERATIVE DENTISTRY.—Harris; Taft.

METALLURGY.—Essig.

REFERENCE BOOKS.—American System of Dentistry; Watts's Chemical Essays.

FEES AND EXPENSES.*

MATRICULATION FEE.—For Michigan students, *ten dollars*; for all others, *twenty-five dollars*.

ANNUAL FEE.—For Michigan students, *twenty-five dollars*; for all others, *thirty-five dollars*.

DIPLOMA FEE.—For all alike, *ten dollars*.

LABORATORY EXPENSES.—*Chemical Laboratory.*—Students are required to pay for the materials and apparatus consumed by them. The average expense for the required course is about *ten dollars*. *Histological Laboratory.*—A charge of *three dollars* is made for material used in this laboratory. *Anatomical Laboratory.*—A charge of *ten dollars* is made for material used in dissection. *Laboratory of Mechanical Dentistry.*—The expenses for tools for each student are about *thirty dollars*, and for incidentals, gas, teeth, etc., about *fifteen dollars*. These are furnished at the College under the direction of the Faculty.

Those who have laboratory tools and appliances should bring them; those who have not, are advised to defer purchasing till they

*The Matriculation Fee and the Annual Fee must be paid in advance, and no seat will be assigned to a student until after such payment. No portion of the fees can be refunded to students who leave the University during the academic year except by order of the Board of Regents.

arrive, as they will then have the aid of the teachers in making proper selections. Each student, before beginning his work, is required to procure the tools and appliances necessary for his own use. A list of these will be furnished him.

OTHER EXPENSES.—For further information in regard to fees and expenses, see pages 29 to 31. The average total expenses of a student of dentistry, including University fees, are from two hundred to two hundred and fifty dollars for the college year of nine months.

Those who desire further information concerning the College of Dental Surgery may address Dr. J. Taft, Dean, Ann Arbor, Michigan.

List of Graduates of 1890.

ORDINARY DEGREES.

BACHELOR OF LETTERS.

Charles Town Alexander,	Irving George McColl,
Mary Blanche Briggs,	Frank Thompson Merry,
Mary Barbour Brown,	Aura Maud Miller,
Sally Brown,	Warren French Mills,
James Eugene Duffy,	Fanny K. Read,
John Evans Gernand,	Ada Knight Terrell,
Louis Edward Gossman,	Harry Wiburt Wakelee,
Grace Ella Harrah,	Charles Albert Wheat,
William Pickett Harris,	Robert Henry Wolcott,
Lydia Eleanor Kniss,	Nathan Putnam Wood.

BACHELOR OF SCIENCE.

(IN BIOLOGY.)

Lewis Murbach.

BACHELOR OF SCIENCE.

(IN CHEMISTRY.)

Moses Gomberg,	Charles Jason Greenstreet,
	John Randolph Rogers.

BACHELOR OF SCIENCE.

(IN ELECTRICAL ENGINEERING.)

William Dearborn Ball,	Winthrop Enoch Gastman,
	Louis Clarence Hill.

BACHELOR OF SCIENCE.

(IN MINING ENGINEERING.)

Walter John Baldwin.

BACHELOR OF SCIENCE.

(IN MECHANICAL ENGINEERING.)

Ernest Ben Conrad,	John Reuben Kempf,
Henry Woolsey Douglas,	Elmer Hartson Neff.

BACHELOR OF SCIENCE.

(IN CIVIL ENGINEERING.)

Frank Anderson,	Rollo Glenroy Manning,
Frank Seymour Baillie,	Edmund Schuyler Colfax May,
Andrew Renick Benson,	James Burton Nelson,
Charles Adam Fisher,	Louis Carlton Sabin,
Joseph Kendall Freitag,	George Bowditch Springer,
Willis Boyd Hayes,	Irving Mason Wolverton.

BACHELOR OF SCIENCE.

(IN GENERAL SCIENCE.)

John Burns Alexander,	Frances Hinkley,
Frank Swift Bourns,	Pomeroy Ladue,
Benjamin Cluff,	Frederick Charles Newcomb,
William Frank Edwards,	Filibert Roth,
Harold Wellman Fairbanks,	Henry Porter Stearns.

BACHELOR OF PHILOSOPHY.

Anna Howard Adams,	Ormond Oscar Lyons,
Franc Arnold,	Walter Leeman Mann,
Arthur Hurd Bannon,	Oscar Wood Moyle,
Harry Moore Bates,	Robert Kennicott Reilly,
Martha Anna Catton,	Jacob Ringer,
Stanton Walter Clarke,	Cora Maria Rowell,
Loretta Crissman,	Harry Rogers Seager,
Mary Edna Dowdigan,	Frederic Latta Smith,
Robin Ernest Dunbar,	George Herbert Snow,
Guy Dale Duncan,	Forest Glenwood Sweet,
Ruth Gentry,	Horace Van Deventer,
Faith Helmer,	Frank Banghart Walker,
Percy Benjamin Herr,	Ruth Anna Willoughby,
Francis Alexander Leslie,	Florence Edna Wilson,
Jenny Louise Wire.	

BACHELOR OF ARTS.

James Rowland Angell,	Alice Harper Damon,
Edith Emma Atkins,	Cora Armenia Deake,
Mary Sophie Barry,	Henry Bingham Dewey,
Dora Bennett,	Edgar Millard Doughty,
Flora Bennett,	Nelson Curtis Field,
Mary Victoria Cady,	George Mygatt Fisk,
Katherine Campbell,	Grant Martin Ford,
Warren John Clough,	Herbert Martin Frost,
William Gibson Cockburn,	Charles Byron Garrison,
Allen Lysander Colton,	Edwin Francis Gay,

William Ellis Goddard,	Edwin Lillie Miller,
Hugh Andrew Graham,	Owen Lambe Miller,
Paul Robert Gray,	Loren Douglas Milliman,
Jacob Leonard Haner,	William Loyd Page,
David Bill Hempstead,	Caroline Crosby Penny,
Jonathan August Charles Hildner,	Harry Nelson Quigley,
Margaret Millicent Hunt,	William Butterfield Ramsey,
Harry James Kennedy,	Leon Josiah Richardson,
Genevieve Kinne,	Edward VanDyke Robinson,
Ella Alferetta Ludwig,	Merib Susan Rowley,
Arthur MacNeal,	Henry Arthur Sanders,
Edgar Withrow MacPherran,	Evelyn Amanda Smith,
William Kilpatrick Maxwell,	Walter Savage Stillman,
Eloise Mayham,	John Howard Todd,
George Edward McIlwain,	Oswald Daniel Vandersluis,

Edwin Abraham Zumbro.

MINING ENGINEER.

Frank Clemes Smith.

CIVIL ENGINEER.

Fred Morley.

MASTER OF SCIENCE.

Nathan Davis Corbin,	Elsie Hadley,
	Will Hittell Sherzer.

MASTER OF PHILOSOPHY.

Lucy Castiny McGee,	Henry Alvin Parker.
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MASTER OF ARTS.

Benjamin Parsons Bourland,	Caroline Miles,
Herbert Fletcher DeCou,	William Francis Palmer,
Mary Louisa Hinsdale,	Flora Mabel Potter,
Ella Adelaide Knapp,	Aldred Scott Warthin,
William Clarence McCollough,	Arlisle Margaret Young.

DOCTOR OF SCIENCE.

Frederick George Novy.

DOCTOR OF PHILOSOPHY.

Hagop Harutune Aterian,	Ephraim Douglass Adams,
	Frederick Charles Hicks.

DOCTOR OF MEDICINE.

(DEPARTMENT OF MEDICINE AND SURGERY.)

Edwin Sawyer Antisdale,	Oscar Baert,
Lotta Ruth Arwine,	John A. Barnette,
Lyle Cholwell Bacon,	Merritt Grant Bassett,

George Bates,
 Thekla Natalie Bengel,
 Joseph D. Bennett,
 Joseph Estabrook Bennett,
 Ada Fenimore Bock,
 John Ackley Boylan,
 Milo Jason Bradley,
 Frank Holmes Brown,
 Delia Lucretia Chapin,
 Daniel Conley,
 William Cleland Conley,
 George Clinton Crandall,
 Elmer Arpad De Lipcsey,
 Charles Faber,
 Robert Cleland Fair,
 George Hill Ferguson,
 Mary Graves Finch,
 Arthur Ferdinand Fischer,
 Willie Clarence Gates,
 George Clifton Gay,
 Charles Augustus Gottman,
 John Gould,
 Samuel H. Graham,
 Mary Theresa Greene,
 Elmer Ellsworth Hagler,
 Emmett Austin Hall,
 Delphine Hanna,
 John Daniel Hare,
 Emma Wheat Hastings,
 Wilber Stephen Henderson,
 Minnie Agnes Howard,
 John Gerrit Huizinga,
 George Malcolm Hull,
 Albert Milton Humber,
 John H. Hunt,
 George William Ingham,
 Joseph Philip Jones,
 Napoleon Dudley Kean,
 George Frederic Keiper,
 Mary Knauf,
 Milton Jennea Longsworth,

Asbury Nelson Loper,
 Frank D. Lydick,
 Lily MacGowan,
 William Goldsmith MacLachlan,
 John Jacob Marker,
 Rose Ettie McCaughna,
 Mary McConahy,
 Allan J. McDonald,
 Eva Elizabeth McKnight,
 Malcolm Graeme McNiven,
 Elizabeth McNutt,
 Louis Kuichling Mezger,
 David Henry Miller,
 Robert Eugene Miller,
 William Levi Moore,
 Mary Elizabeth Newcomb,
 Edgar Warren Oswald,
 Judson Albert Palmer,
 William Mason Payne,
 Francis Malcolm Phillips,
 Adelle Priscilla Pierce,
 John David Riker,
 Arthur Sidney Rogers,
 Arthur Shoudy Rowley,
 Walter Neale Salisbury,
 Arthur W. Scidmore,
 Howard Sedgwick,
 Charles Shickle,
 Roland Edward Skeel,
 James Ephraim Smedley,
 Patrick Joseph Sullivan,
 William Sherman Taylor,
 William Evart Visscher,
 James Henry Waite,
 Fred Eugene Warren,
 Agnes Clara Weaver,
 Stephen Achrist Whinery,
 Everett Jerome Whitehead,
 Curtis Carrington Williams,
 Clarence Benjamin Wilson,
 William D. Wood,

Henry Middleton Woolman.

BACHELOR OF LAWS.

John Craig Abel,
 Charles Edward Adams,
 Fred Lewis Alger,
 David Roscoe Anderson,
 John Wendell Anderson,
 Allen Beham Angney,
 Perry John Ashdown,
 Wilber Edwin Bailey,
 Henry Ward Baird,
 James Everett Ball,
 John Barrow,
 Henry James Barton,
 Roscoe Charles Barton,
 Laverne Bassett,
 William Theodore Behne,
 Frank Allison Bell,
 Rufus Henry Bennett,
 James Edwin Bohart,
 Perry Calahan Booth,
 Benjamin Jones Boutwell,
 Van Rensselaer Brown,
 John Franklin Buckner,
 Benjamin Wade Burleigh,
 Ulysses Grant Butcher,
 James Paul Byrne,
 Robert Joseph Byrne,
 John Francis Calhoun,
 Henry Ward Canfield,
 John Mousley Cannon,
 William Edward Carroll,
 William Francis Carter,
 John Benjamin Chaddock,
 Hannibal Greenwood Coburn,
 Oliver Darling Comstock,
 Jerome Franklin Cooke,
 John Leonard Copeman,
 Elmer Ellsworth Corfman,
 Linton Alden Cox,
 Anthony Michels Crafton,
 George Louis Crocker,
 Daniel Webster Crockett,
 John Dailey,
 Brode Bedford Davis,

David Jones Davis,
 Hiram Griswold Davis,
 Anthony Deahl,
 Louis August Dennert,
 Simon P. Domer,
 Albert Arthur Dorn,
 Francis William Duha,
 Daniel Edward Dwyer,
 Everett E. Ellinwood,
 Hallie C. Ellis,
 William Sherman Emmons,
 Charles Place Evans,
 Joseph Feltwell,
 John Alexander Ferguson,
 William Sheridan Ferguson,
 Leo Helfrich Fisher,
 John Perry Flournoy,
 Joseph R. Foltz,
 William Henry Foster,
 Tomosaku Fukuda,
 Corbus Plummer Gardner,
 Albert Eugene Gebhardt,
 Hugo Peter Geisler,
 Samuel Nelson Gerber,
 Sue A. Getchell,
 Samuel Henry Goodall,
 James Willis Goodwin,
 William Amasa Grace,
 James Knox P. Grider,
 Michael Francis Griffith,
 John Washington Hall,
 Robert Gerry Harman,
 James Ellingham Hart,
 Gisan Hashimoto,
 Robert Hess,
 Charles Higley,
 James Robertson Hile,
 Gontaro Horio,
 Frank Oliver Housken,
 Thomas Webster Hoyt,
 Mortimer Leonard Hudson,
 Edward Albert Huene,
 Burdge Hamilton Hurd,

Charles Hutchinson,
Silas Paul Hutchinson,
Thomas Wesley Hutchison,
Daniel Henry James,
Anderson Bartlett Johns,
Elias Finley Johnson,
Franklin Charles Johnson,
George Austin Johnson,
Bamlet Edward Johnston,
Rodolphus Waite Joslyn,
Kiichiro Kambe,
George Anthony Katzenberger,
Camden Warren Keen,
Edgar Elmer Kelsey,
George Marshall Kendall,
Edward Joseph Kent,
James Wilson Kern,
Charles Theron King,
Charles Allee Kinnear,
Lee Rockwell Kinnear,
John Kinsella,
Julian Ambar Knight,
Seth Wells Knight,
Edgar Frederick Koehler,
Brick Pomeroy Kuhn,
Shigetame Kumai,
Thurlow Weed Lane,
Washington Drennen Latimer,
Edward Raymond Learned,
Edmund Lockwood,
William Charles Malley,
William Albert Marsh,
Edward Cooke Mason,
Edwin Foushee McCausland,
Tom Elwood McClelland,
Marshall Gwinn McClung,
James Shields McCreary,
John Morton McDonald,
Richard James McNally,
Wade Watts Meloan,
Clarence Mercer,
George Edward Miller,
John Hunter Miller,
Taro Miosh,

Frank D. Miracle,
John Ausburn Mitton,
Torajiro Mogi,
Clarence Monaghan,
Charles Marion Morgan,
John Vincent Morgan,
Lloyd Walker Moultrie,
Thomas Mulvihill,
Orrice Abram Murdock,
George Murray,
Shotaro Ozawa,
Charles Anson Palmer,
Lewis Wallace Parker,
Walter Cornelius Parmenter,
Horace Edwin Partridge,
Henry Frank Pennington,
Carl Sigfrid Peterson,
William Wallace Phelps,
Edward White Philbrick,
Byron Luther Pierce,
Frank Pierce,
Waldo Theodore Potter,
Arthur Eugene Pratt,
U. Grant Race,
George Quayle Rich,
Daniel Brigham Richards,
Benjamin Franklin Richardson,
Jesse Winfield Riddle,
Francis Marion Robles,
George William Roth,
William Richard Rummler,
Nestor Rummons,
Francis Aloysius Schilling,
William Schlagenhauf,
John Welton See,
Thomas Wheatly Shackelford,
George Brace Shattuck,
Frank Marion Sheridan,
Jesse Hiram Sherman,
Charles J. Shoemaker,
Alvah Grinnell Smith,
Andrew Jackson Smith,
Byron Franklin Smith,
Alvin Curtis Spindler,

Hiram Emery Starkey,
 John Charles St. Clair,
 Robert Lee Stephens,
 Lambert Sternberg,
 William Alexander Stolts,
 Edgar Ellsworth Stone,
 Edmund Sullivan,
 Edmund Eugene Sullivan,
 John Robert Sutton,
 James Swan,
 George Adam Sweigert,
 Clare Palmer Tallman,
 William Robert Taylor,
 Jacob John Thomas,
 Guy Bradley Thompson,
 William Mitchell Thompson,
 Flora V. Woodward Tibbitts,
 Joseph Newton Tillett,
 Philip Hamilton Travis,

Will Hendricks Trook,
 Henry Clinton Van Meter,
 Edward Minock Vining,
 Orlando Chester Volkmor,
 Will Hatch Walden,
 Percy Ansel Walling,
 Arthur James Waters,
 Archie E. Watson,
 John David Wendorff,
 Frederick Curtenius Wetmore,
 Samuel Williams Widney,
 Philip Wilkinson,
 Charles Albert Wilson,
 Horace Duke Wilson,
 George Webster Wiltse,
 Conrad Wolf,
 Joseph Church Wood,
 Judd Yelland,
 John Frank Ziegler.

MASTER OF LAWS.

Takanosuka Iriye,
 Warren French Mills,
 Harvev Arthur Penny,

William Vance Rinehart,
 Reitaro Takano,
 John Herbert Winans.

PHARMACEUTICAL CHEMIST.

Robert Bruce Armstrong,
 George Henry Daniel Baert
 Charles Wilson Baker,
 Fred Wilford Baker,
 Samuel Robert Boyce,
 William Elbert Collins,
 George Spencer Hawes,
 Charles William Hollis,
 Louis Henry Huber,
 William Ihardt,
 Ernest Myers Jarman,
 Lyman Frederic Kebler,
 Maurice Sheehan Kirby,
 Thomas Edward Kirby,
 Theophil Klingmann,
 Moritz M. Levy,

Charles Edward Martzloff,
 Ben J. McGuire,
 Otto Paul Meyer,
 Thomas Jonathan Milner,
 Herman George Niermann,
 Wallace Palmer,
 Christian Purtscher,
 Will Mathias Scheuerman,
 Oscar Frederick Schmid,
 Charles Cornell Sherrard,
 Henry Alonzo Thayer,
 William Isaac Tibbals,
 Cora Louisa Wait,
 Dean M. Westfall,
 Clarence H. Wise,
 Homer R. Wood,

Roy Demas Young.

DOCTOR OF MEDICINE.

(HOMOEOPATHIC MEDICAL COLLEGE.)

James Cordon Avery,	Alfred Bernard Jordan,
Leigh Yerkes Baker,	Alice Keefer,
William Colfax Brownell,	Frances Jennings Miner,
Ernest Albert Clark,	Mary Anna Morley,
Anna Calista Clarke,	Andrew Bodwell Nelles,
Eva Alice Cunningham,	Grant Sherman Peck,
Mary Denison,	Paul Augustus Perrenoud,
Francis Chipman Ford,	Everett Jay Phelps,
Harvey Elmer Hoffman,	Lewis Frank Rice,
Leslie Allen Howe,	Fred Clyde Sanford,
Amelia Johnston,	Harriet Augusta Spinney.

DOCTOR OF DENTAL SURGERY.

William R. Calhoun,	Eli Louis Moore,
Leo David Camp,	George Northcroft,
Ernest Catt,	Henry Turner Osborne,
Charles Eli Collamer,	James Andrew Oswald,
Charles Floyd Cook,	Albert John Rust,
George Howe Copp,	Charles B. Scudder,
Norman Kershaw Cox,	Alice Lovyse Sherman,
Charles Hugo Farman,	William Hall Sieberst,
Fred Dawson Fisher,	Fred Cameron Sizelan,
John Joseph Giusti,	Mortimer F. Stever,
Ida Gray,	Fritz Bernhart Tegener,
John Jarius Green,	George T. Thuerer,
Bertrand Francois Hall,	Howard Devon Van Antwerp,
Edgar Allen Honey,	Gerrit Henry Veldhuis,
William George Howley,	John Hardin Waterhouse,
John Barnet Keesing,	Charles Elmer Welch,
Melville Arthur Mason,	Gordon William Welch,
Carolyn Murray McElroy,	Aarry Lloyd Williams,
Chester Cleveland Merriman,	Paul Woolsey.

HONORARY DEGREES.

MASTER OF ARTS.

HENRY BROOKS BAKER,

Secretary of the Michigan State Board of Health.

ALBERT AUGUSTUS STANLEY,

Professor in the University.

DOCTOR OF PHILOSOPHY.

LUCINDA HINSDALE STONE,

Teacher and Writer.

DOCTOR OF MEDICINE.

WILLIAM HENRY HOWELL,

Professor in the University.

DOCTOR OF LAWS.

AUSTIN BLAIR,

Lawyer; ex-Regent of the University; ex-Governor of Michigan.

CATALOGUE
OF
FACULTIES AND STUDENTS
FOR
THE YEAR 1890-91.

DEPARTMENT
OF
Literature, Science, and the Arts.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

ALBERT B. PRESCOTT, Ph. D., M. D.,

Rev. MARTIN L. D'OOGHE, LL. D.,

DEAN.

CHARLES E. GREENE, A. M., C. E.,

WILLIAM H. PETTEE, A. M.,

MARK W. HARRINGTON, A. M.,

JOSEPH B. STEERE, Ph. D.,

EDWARD L. WALTER, Ph. D.,

*ALEXANDER WINCHELL, LL. D.,

ISAAC N. DEMMON, A. M.,

ALBERT H. PATTENGILL, A. M.,

MORTIMER E. COOLEY, M. E.,

WOOSTER W. BEMAN, A. M.,

VICTOR C. VAUGHAN, Ph. D., M. D.,

THOMAS M. COOLEY, LL. D.,

CHARLES S. DENISON, M. S., C. E.,

HENRY S. CARRIART, A. M.,

RAYMOND C. DAVIS, A. M.,

VOLNEY M. SPALDING, A. B.,

HENRY C. ADAMS, Ph. D.,

CALVIN THOMAS, A. M.,

BURKE A. HINSDALE, Ph. D.,

RICHARD HUDSON, A. M.,

ALBERT A. STANLEY, A. M.,

JOHN DEWEY, Ph. D.,

FRANCIS W. KELSEY, Ph. D.,

* Died February 10. 1891.

OTIS C. JOHNSON, PH. C., A. M.,
PAUL C. FREER, PH. D., M. D.,
WILLIAM H. HOWELL, PH. D., M. D.,
JOSEPH B. DAVIS, C. E.,
ANDREW C. McLAUGHLIN, A. B.,
P. R. DE PONT, A. B., B. S.,

REGISTRAR.

CLARENCE G. TAYLOR, B. S.,
JACOB E. REIGHARD, PH. B.,
THOMAS C. TRUEBLOOD, A. M.,
GEORGE HEMPL, PH. D.,
EDWARD B. CAMPBELL, B. S.,
JOSEPH H. DRAKE, A. B.,
FRED N. SCOTT, PH. D.,
FRANK N. COLE, PH. D.,
JOHN C. ROLFE, PH. D.,
ALVISO B. STEVENS, PH. C.,
FRED M. TAYLOR, PH. D.,
ALEXANDER ZIWET, C. E.,
FRANK C. WAGNER, A. M., B. S.,
FREDERICK G. NOVY, Sc. D.,
WILLIAM W. CAMPBELL, B. S.,
CHARLES K. McGEE, A. B.,
CARL W. BELSER, PH. D.,
JAMES H. TUFTS, A. B., B. D.,
GEORGE W. PATTERSON, A. B., S. B.,
WILLIAM J. HUSSEY, B. S.,
JOSEPH L. MARKLEY, PH. D.,
WILLARD K. CLEMENT, A. M.,
EDWIN W. FAY, PH. D.,
JOSEPH V. DENNEY, A. B.,
JOHN H. T. McPHERSON, PH. D.,
C. CARROLL MARDEN, A. B.,
MORITZ LEVI, A. B.,
GEORGE A. HENCH, PH. D.,
MAX WINKLER, A. B.,
FREDERICK C. NEWCOMBE, B. S.,
FREDERICK C. HICKS, PH. D.,
FRED MORLEY, B. S.,
GLEN L. SWIGGETT, A. B.,
ELMER A. LYMAN, A. B.,
*WILL H. SHERZER, M. S.

*Mr. Sherzer was appointed Instructor in Geology and Palæontology in February 1891, after the death of Professor Winchell.

JOHN W. LANGLEY, S. B., M. D.,

Non-Resident Lecturer on the Metallurgy of Steel.

CARROLL D. WRIGHT, A. M.,

Non-Resident Lecturer on Political Economy.

EDWIN R. A. SELIGMAN, LL. B., PH. D.,

Non-Resident Lecturer on Political Economy.

Other Instructors and Assistants.

ALICE HUNT,

FRANK A. WAPLES, B. S.,

FRANCIS W. BREWER, M. D.,

MOSES GOMBERG, B. S.,

CHRISTIAN G. JENTER, PH. C.,

BERNHARD C. HESSE, PH. C.

STUDENTS.*

HOLDER OF THE ELISHA JONES CLASSICAL FELLOWSHIP

NAME.	RESIDENCE.
Herbert Fletcher De Cou, A. M., Studying in Germany.	<i>Detroit.</i>

CANDIDATES FOR AN ADVANCED DEGREE, AND OTHER
RESIDENT GRADUATES.

NAME.	RESIDENCE.
Arietta Maria Abbott, A. B., <i>Vassar College.</i> German; Gothic; Anglo-Saxon.	<i>Grand Rapids.</i>
James Rowland Angell, A. B., Psychology; American History; Political Economy.	<i>Ann Arbor.</i>
Ella Howison Carnall, A. B., <i>Arkansas Industrial University.</i> English Literature; German; Anglo-Saxon.	<i>Fort Smith, Ark.</i>
Fred Converse Clark, A. M., Political Economy; International Law; History.	<i>Ann Arbor.</i>
Samuel Medary Dick, A. B., <i>Ohio Wesleyan University.</i> Philosophy; English; Political Science.	<i>Columbus, O.</i>
Benjamin Leonard D'Ooge, A. M., Latin; Greek; Gothic.	<i>Ypsilanti.</i>

* Note.—The following is the explanation of the letters and figures set against the students' names:

The letters in the column under the heading DEGREE show for what degree a student is a candidate. The figures under the heading COURSES show the number of Full Courses taken prior to the beginning of the current academic year, 1890-91, and completed without conditions. By a Full Course is meant the equivalent of five exercises a week during a semester (page 77). The abbreviation U. means university system (page 80).

The principal subjects of study pursued by candidates for advanced degree are indicated under their respective names.

- Edgar Millard Doughty, A. B., *Matteawan, N. Y.*
English; Political Economy; Philosophy.
- Vincent Richard Dwyer, A. B., *Detroit.*
Detroit College.
- William Worth Eagan, PH. B., *Ann Arbor.*
Latin; German; English Literature.
- William Frank Edwards, B. S., *Ann Arbor.*
Organic Chemistry; Physics; Physiological Chemistry.
- Caroline Louise Gelston, A. B., *Ann Arbor.*
Greek; Italian; Archæology.
- Moses Gomberg, B. S., *Ann Arbor.*
Chemistry; Crystallography.
- William Amasa Grace, A. B., LL. B., *Ann Arbor.*
History; Constitutional Law; Political Economy.
- Ruth Hoppin, A. M., *Moore Park.*
Oberlin College. History; English Literature; Botany.
- John Nelson James, A. B., *Chicago, Ill.*
- David Martin Lichty, B. S., *Goodville, Pa.*
West Chester State Normal School. Chemistry; Physics; Zoölogy.
- John Lockheart Logan, B. L., *Abbeville, Miss.*
Mississippi College.
- Lacy Castiny McGee, PH. M., *Luray, Kan.*
- Thomas Lincoln McKean, A. B., *Berea, O.*
Baldwin University.
- Robert Bruce McPherson, B. S., *Howell.*
Michigan Agricultural College. Political Economy; History; German.
- William John Meyers, B. S., *Lansing.*
Michigan Agricultural College.
- Caroline Miles, A. M., *Carthage, Ind.*
Philosophy; History; German.
- Elmer Lyman Mills, A. B., *Hillsdale.*
Hillsdale College. Pedagogy; History; English Literature.
- Henry Close Montgomery, A. B., *Seymour, Ind.*
Hanover College. Pedagogy; English Literature; Latin.
- William Wilber Morrison, B. S., *Lansing.*
Michigan Agricultural College.
- Samuel Wilber Norton, A. M., *Hillsdale.*
English Literature; German; Anglo-Saxon.
- Harvey Newton Ott, PH. B., *Albion.*
Albion College. Zoölogy; Botany; Organic Chemistry.
- William Francis Palmer, A. M., *West Richfield, O.*
Greek; Latin; Sanskrit.
- Henry Alvin Parker, PH. M., *Hillsdale.*
English Literature; History; Philosophy.
- James Rood Robertson, A. B., *Rockford, Ill.*
Beloit College. English Literature; Philosophy; History.
- Edward Van Dyke Robinson, A. B., *Ann Arbor.*
History; Political Economy; English Literature.

180 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

James Adams Shelton, B. S., <i>Iowa Agricultural College.</i> History; Philosophy; English Literature.	<i>Des Moines, Ia.</i>
John Ray Sherrick, PH. B., <i>Earlham College.</i> English Literature; Philosophy; Pedagogy.	<i>Westfield, Ind.</i>
Hiram Allen Sober, A. B., Greek; Latin; Sanskrit.	<i>Ann Arbor.</i>
Charles Edward St. John, B. S., <i>Michigan Agricultural College.</i>	<i>Ypsilanti.</i>
Ida Maria Street, A. M., Psychology; English Literature; Philosophy	<i>Ann Arbor.</i>
Eliza Read Sunderland, PH. B., History of Philosophy; Economics; Ethics.	<i>Ann Arbor.</i>
Edgar J. Townsend, PH. B., <i>Albion College.</i> Pedagogy; English Literature; Mathematics.	<i>Litchfield.</i>
Henry Thurtell, B. S., <i>Michigan Agricultural College.</i>	<i>Agricultural College.</i>
Joseph Lawton Williams, PH. B., <i>Alfred University.</i>	<i>Hornellsville, N. Y.</i>
Ardisle Margaret Young, A. M., English Literature; Philosophy; French.	<i>Grand Rapids.</i>

The following students enrolled in other Departments of the University are also candidates for an advanced degree in the Department of Literature, Science, and the Arts. See page 82.

Enrolled in the Department of Medicine and Surgery.

Lemuel Churchill, B. S., <i>Michigan Agricultural College.</i> Physiology; Hygiene; Zoölogy.	<i>Three Oaks.</i>
Cleon Melville Hibbard, A. B., <i>Missouri State University.</i> Sanitary Science; Organic Chemistry; Physiology.	<i>Canton, Mo.</i>
Guy Lincoln Kiefer, A. B., Physiology; Histology; Organic Chemistry.	<i>Detroit.</i>

Enrolled in the Department of Law.

Frederick Augustus Henry, A. B., <i>Hiram College.</i> Philosophy; Pedagogy; Economics.	<i>Geauga Lake, O.</i>
Harmon Chamberlin St. Clair, B. L., History; English Literature; Pedagogy.	<i>Bay City.</i>

CANDIDATES FOR A MASTER'S DEGREE AND FOR A DEGREE IN ENGINEERING, STUDYING IN ABSENTIA.

NAME.	RESIDENCE.
Wirt McGregor Austin, PH. B., Political Economy; American Literature; History.	<i>Lapeer.</i>
Walter John Baldwin, B. S., Mining Engineering.	<i>Houghton.</i>
Mary Sophie Barry, A. B., Latin; English; German.	<i>Galena, Ill.</i>
Virginia Beauchamp, A. B., Latin; German; French.	<i>Colorado Springs, Col.</i>

Louis Begemann, B. S., Philosophy; Physics; Pedagogy.	<i>Corydon, Ia.</i>
Willis Boughton, A. B., English Literature; American Literature; History.	<i>Athens, O.</i>
Mary Sophia Case, A. B., British Philosophy; Political Science; English Literature.	<i>Wellesley, Mass.</i>
Elizabeth Rebecca Clark, A. B., English Literature; Pedagogy; Philosophy.	<i>Lakeville, N. Y.</i>
Benjamin Cluff, B. S., Pedagogy; Mathematics; Philosophy.	<i>Proro City, Utah.</i>
Alice Harper Damon, A. B., English; Greek.	<i>Concord, Mass.</i>
Daniel Ephraim Ewald, A. B., English Literature; Pedagogy; Latin.	<i>Racine, Wis.</i>
David Felmley, A. B., Political Economy; Pedagogy; Mathematics.	<i>Normal, Ill.</i>
*Herbert Martin Frost, A. B., Latin; Greek; Philosophy.	<i>East Saginaw.</i>
Ellen Elizabeth Garrigues, A. B., English Literature; French; Philosophy.	<i>Washington, D. C.</i>
William Ellis Goddard, A. B., Ethics; English Literature; Philosophy.	<i>Marshall.</i>
John Hubert Greusel, B. L., History; English Literature; German.	<i>Detroit.</i>
Faith Helmer, Ph. B., German; American Literature; Latin.	<i>La Grange, Ill.</i>
Belva Mary Herron, B. L., History; Political Economy; German.	<i>Jacksonville, Ill.</i>
Jonathan August Charles Hildner, A. B., German; Philosophy; English Literature.	<i>Hancock.</i>
Elmer Ellsworth Hubbard, A. B., American Literature; Philosophy; Sanitary Science.	<i>Toyotsu, Japan.</i>
Violet DeLille Jayne, A. B., English Literature; German; History.	<i>Oshkosh, Wis.</i>
Emory Davis Kirby, A. B., Greek; Latin; Philosophy.	<i>Battle Creek.</i>
Hein Lankheet, B. S., Mathematics; Physics; Chemistry.	<i>Allegan.</i>
Jephtha Elmer Lemon, A. B., Pedagogy; English; History.	<i>West Bay City.</i>
Eugene Frank Lohr, A. B., German; Pedagogy; French.	<i>South Bend, Ind.</i>
Dora Kennedy Matthews, B. L., English Literature; Biology; Philosophy.	<i>Grand Rapids.</i>
William Andrew McAndrew, A. B., English Drama; History; Scotch Poetry.	<i>Hyde Park, Ill.</i>

* Deceased.

182 DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.

Edwin Lillie Miller, A. B., English Literature; Philosophy; German.	<i>Detroit.</i>
Loren Douglas Milliman, A. B., Pedagogy; English.	<i>Lakeville, N. Y.</i>
Isaac Newton Payne, A. B., Philosophy; Political Economy; History.	<i>Detroit.</i>
Nellie Stanley Payne, A. B., English Literature; Political Economy; Philosophy.	<i>Detroit.</i>
Caroline Crosby Penny, A. B., German; Latin; History.	<i>Saginaw.</i>
Percy Hunt Richardson, B. S., Civil Engineering.	<i>Portland, Me.</i>
Chester Harvey Rowell, Ph. B., Philosophy; English Literature; Romance Languages.	<i>Washington, D. C.</i>
George Frederick Rush, A. B., History; Political Economy; American Literature.	<i>Chicago, Ill.</i>
Thomas Chalkley Severance, A. B., English Literature; Ethics; United States History.	<i>Two Harbors, Minn.</i>
Efle Almira Southworth, B. S., Botany; Zoölogy.	<i>Washington, D. C.</i>
Fred Bernard Spaulding, A. B., History; English Literature; Pedagogy	<i>Charlotte.</i>
Arthur William Stalker, A. B., Philosophy; History; English.	<i>Clinton.</i>
Albert Boynton Storms, A. B., Philosophy; History; English Literature.	<i>Detroit.</i>
Henry Silas Tibbits, A. B., Pedagogy; American Literature; American History.	<i>Chicago, Ill.</i>
Charles Orrin Townsend, B. S., Botany; Zoölogy; Physiology.	<i>Atlanta, Ga.</i>
Frank Enos Welch, A. B., German; Latin; French.	<i>Trinity College, N. C.</i>
Chauncey Alvan Wheeler, A. B., English Literature; Greek; Anglo-Saxon.	<i>Kalamazoo.</i>
George Walton Whyte, B. S., Metallurgy; Chemistry; Economic Geology.	<i>Dayton, Tenn.</i>
Elmer Grant Willyoung, B. S., Physics; German; United States History.	<i>Philadelphia, Pa.</i>
Horace Vaughn Winchell, B. S., Economic Geology; Chemical Geology.	<i>Minneapolis, Minn.</i>

CANDIDATES FOR A BACHELOR'S DEGREE.

NAME.	DEGREE.	COURSES.	RESIDENCE.
Charles Wallace Adams,	B. L.		<i>Utica.</i>
John Quincy Adams,	B. L.		<i>Utica.</i>
Abraham Kohn Adler,	B.S.(Mech.E.)7		<i>Chicago, Ill.</i>
Fred Alexander,	A. B.	6 2-5	<i>Detroit.</i>
Charles Brunson Allen,	A. B.		<i>Spring Arbor</i>

Frank Lyman Allen,	B. S.	<i>Hyde Park, Ill.</i>
Hilah Lockwood Allen,	B. L.	20 3-5 <i>Portland.</i>
John Robins Allen,	B.S.(Mech.E.)	13 1-5 <i>Milwaukee, Wis.</i>
Josephine Allen,	B. L.	24 <i>Ottawa, O.</i>
Sadie Maria Alley,	B. S.	2 <i>Detroit.</i>
Elmer Louis Allor,	B.S.(C.E.)	14 4-5 <i>Mt. Clemens.</i>
Katharine Sprague Alvord,	A. B.	5 <i>Sandusky, O.</i>
Loowina Hattie Amberg,	B. L.	9 4-5 <i>Battle Creek.</i>
Robert Lewis Ames,	B.S.(Mech.E.)	2 4-5 <i>Pokagon.</i>
Duncan Anderson, Jr.,	B.S.(Chem.)	6 1-5 <i>Ogdensburg, N. Y.</i>
Rosetta Anderson,	A. B.	4 4-5 <i>Ann Arbor.</i>
Lucy Sadie Andrews,	B. L.	7 2-5 <i>Saginaw.</i>
William Holmes Andrews,	Ph. B.	5 1-5 <i>Canandaigua, N. Y.</i>
George Hall Angell,	B. L.	<i>Detroit.</i>
Julia Morehouse Angell,	Ph. B.	<i>Chicago, Ill.</i>
Lora Dart Ankeney,	B. S.	<i>Des Moines, Ia.</i>
Cora Deette Aphthorp,	B. L.	7 1-5 <i>Big Rapids.</i>
Frank Riley Ashley,	B.S.(Chem.)	19 4-5 <i>Denver, Col.</i>
Charles Gillman Atkins,	B.S.(Mech.E.)	15 1-5 <i>Tiffin, O.</i>
Helen Agnes Atkins,	Ph. B.	13 <i>Geneva, N. Y.</i>
Ruth Gertrude Bagley,	A. B.	6 4-5 <i>Detroit.</i>
Anna May Bailey,	B. L.	5 2-5 <i>Tecumseh.</i>
Delia Sophia Bailey,	A. B.	<i>Grand Rapids.</i>
Verdie Baker,	B. L.	22 <i>Woodview, O.</i>
Warren Dwight Baker,	A. B.	6 2-5 <i>Buchanan.</i>
Glen Edward Balch,	B.S.(C.E.)	14 <i>Kalamazoo.</i>
Hadley Baldwin,	B.S.(C.E.)	6 2-6 <i>Doe Run, Pa.</i>
George Edward Ball,	A. B.	<i>Marquette.</i>
Emma McAllan Ballentine,	A. B.	20 <i>Port Huron.</i>
Charles Edwin Bancker,	A. B.	<i>Jackson.</i>
Mary Clark Bancker,	Ph. B.	20 4-5 <i>Jackson.</i>
Blanche Beatrice Banta,	A. B.	5 2-5 <i>Le Mars, Ia.</i>
Grant S. Barber,	B. S.	24 1-5 <i>Ann Arbor.</i>
Henri Newton Barber,	A. B.	<i>Irving Park, Ill.</i>
Grace May Barbour,	B. L.	<i>Chicago, Ill.</i>
James Solomon Barcus,	A. B.	<i>Ann Arbor.</i>
Mary Jane Barmby,	A. B.	3 2-5 <i>East Saginaw.</i>
Claribel Ruth Barnett,	Ph. B.	6 <i>Kent, O.</i>
Fanny Barnett,	A. B.	7 4-5 <i>Kent, O.</i>
Thomas Edson Barnum,	B.S.(E.E.)	13 <i>Port Huron.</i>
Charles James Barr,	Ph. B.	13 <i>Aurora, Ill.</i>
Joseph Edmund Barrell,	B.S.(C.E.)	<i>Grand Rapids.</i>
Nellie Prescott Barrett,	B. S.	<i>Chicago, Ill.</i>
William Bassett,	B.S.(Mech.E.)	12 4-5 <i>Ann Arbor.</i>

Thomas Wilson Battin,	B.S.(Mech.E.)	<i>Omaha, Neb.</i>
William Frederick Baur,	Ph. B. 6	<i>Ann Arbor.</i>
Myra Beach,	B. L. 10 2-5	<i>Battle Creek.</i>
Edward Scott Beck,	A. B. 6 2-5	<i>Holton, Kan.</i>
Archibald Lachlan Becker,	B.S.(Mech.E.) 3 2-5	<i>Hesperia.</i>
Alice Whitney Beckwith,	B. L. 7 2-5	<i>Ann Arbor.</i>
Frillie Gertrude Beckwith,	B. L. 1 3-5	<i>Ann Arbor.</i>
Maude Benjamin Bedell,	-A. B. 6 3-5	<i>Jackson.</i>
Fern Amelia Beebe,	Ph. B. 5	<i>Big Rapids.</i>
Ira Charles Belden,	Ph. B. 6 1-5	<i>Kanerville, Ill.</i>
Jennie Louise Bement,	B. L. 8 4-5	<i>Maple Rapids.</i>
Charles Coleman Benedict,	-A. B. 14 4-5	<i>Lebanon, O.</i>
Elbert King Benedict,	B.S.(Chem.) 9 1-5	<i>Manistee.</i>
Elsie Chenault Bennett,	Ph. B.	<i>Richmond, Ky.</i>
James O'Donnell Bennett,	-A. B. 6 3-5	<i>Jackson.</i>
Mary Ella Bennett,	Ph. B. 5 2-5	<i>Ann Arbor.</i>
Dirk Lawrence Betten, A. B.,	-A. B. 19 1-5	<i>Orange City, Ia.</i>
Hope College.		
Mortimer Osborne Bigelow,	B.S.(C.E.) 11 1-5	<i>Birmingham.</i>
James Pyper Bird,	-A. B. 6 2 5	<i>Ann Arbor.</i>
John Charles Bird,	B.S.(Mech.E.)	<i>Jackson.</i>
William Warner Bishop,	-A. B. 10 2-5	<i>Detroit.</i>
John Yerkes Blackwood,	B.S.(Mech.E.) 5 1-5	<i>Northville.</i>
Charles Luther Blodgett,	-A. B. 18	<i>Eaton Rapids.</i>
Georgiana Cleis Blunt,	-A. B.	<i>Ann Arbor.</i>
Harry Walter Booth,	B. S. 10 4-5	<i>Erie, Pa.</i>
Mamah Bouton Borthwick,	-A. B. 13 3-5	<i>Oak Park, Ill.</i>
Charles Ambrose Bowen,	-A. B. 13 1-5	<i>Marathon, O.</i>
Carl Boyd,	B. L.	<i>Ann Arbor.</i>
Marcus Calvin Boylan,	B. S. 4-5	<i>Ann Arbor.</i>
Thomas Parks Bradfield,	Ph. B.	<i>Grand Rapids.</i>
George Russel Brandon,	B.S.(Mech.E.) 23 2-5	<i>Detroit.</i>
Ernest Story Braymer,	B. L.	<i>Chicago, Ill.</i>
James Fleming Breakey,	B. S. 8 1-5	<i>Ann Arbor.</i>
Robert John Brennan,	B.S.(C.E.) 3 2-5	<i>Mt. Clemens.</i>
Clare Briggs,	B. S.	<i>Battle Creek.</i>
John Jerome Brinckerhoff,	B. L. 5 1-5	<i>Joliet, Ill.</i>
Myrn Brockett,	B. L. 11 4-5	<i>Charlotte.</i>
Christine Frederica Bronson,	Ph. B. 6 4-5	<i>Orchard Lake.</i>
Albert Langley Brown,	B. L.	<i>Cheltenham, Ill.</i>
Albert Sidney Brown,	-A. B. 16 1-5	<i>Chicago, Ill.</i>
Carrie Brown,	B. S.	<i>Big Rapids.</i>
William Simon Brown,	B. S. 19	<i>Elgin, Ill.</i>

Walter Rollin Browning, B. S., B.S.(C.E.)	15	<i>Hamlin, Kan.</i>
Kansas Agricultural College.		
Benjamin Franklin Buck,	A. B.	8 3-5 <i>Ann Arbor.</i>
Gertrude Buck,	A. B.	<i>Kalamazoo.</i>
Minnie Thornton Buick,	B. L.	19 4-5 <i>Detroit.</i>
Harry Conant Bulkley,	A. B.	13 1-5 <i>Monroe.</i>
Ernest Nelson Bullock,	A. B.	<i>Randolph, Mass.</i>
Phebe Josepha Bullock,	A. B. (U.)	<i>East Saginaw.</i>
George Jaffray Bunday,	B.S.(E.E.)	<i>Albion.</i>
Gertrude Mary Bundy,	A. B.	12 3-5 <i>Chicago, Ill.</i>
Abraham Lincoln Burgan,	B.S.(E.E.)	<i>Lake Linden.</i>
James Burgan,	B.S.(C.E.)	<i>Lake Linden.</i>
Cameron Clarke Burns,	A. B.	5 4-5 <i>Kalamazoo.</i>
Fitzhugh Burns,	A. B.	12 4-5 <i>Kalamazoo.</i>
George W. Burt,	B.S.(Mch.E.)	3 4-5 <i>Armington, Ill.</i>
Mary Elizabeth Butler,	A. B.	16 4-5 <i>Brooklyn, N. Y.</i>
Wolcott Hackley Butler, LL. B. Ph. B.		19 3-5 <i>Allegan.</i>
Henry Magnus Butzel,	Ph. B.	19 3-5 <i>Detroit.</i>
Emma Elizabeth Buys,	B. L.	<i>Sturgis.</i>
Fred George Cadwell,	A. B.	17 <i>Adrian.</i>
George Jason Cadwell,	B. L.	<i>Woodlawn Park, Ill.</i>
Margaret Marsh Cahill,	B. S.	6 <i>Lansing.</i>
Jeannette Eliza Caldwell,	A. B.	<i>Ann Arbor.</i>
Maud Elaine Marie Caldwell,	Ph. B.	4 4-5 <i>Fremont, O.</i>
William Richard Caldwell,	B.S.(C.E.)	<i>Traverse City.</i>
Alfred Stone Calkins,	B.S.(C.E.)	19 1-5 <i>Allegan.</i>
Katherine Barker Camp,	B. S.	7 <i>Sandusky, O.</i>
Charles Cisco Campbell,	Ph. B.	<i>Leiter's Ford, Ind.</i>
Elizabeth Alma Campbell,	Ph. B.	18 4-5 <i>Ann Arbor.</i>
Mattie Ormsby Campbell,	B. S.	13 1-5 <i>Ann Arbor.</i>
Robert Clair Campbell,	B. S.	<i>Ypsilanti.</i>
Henry Ernest Candler,	B. S.	11 2-5 <i>Detroit.</i>
William Bradford Canfield,	Ph. B.	<i>Detroit.</i>
Bertha Mabel Carleton,	Ph. B.	<i>St. Clair.</i>
Irving Dallas Carpenter,	B.S.(C.E.)	14 <i>Battle Creek.</i>
June Carpenter,	Ph. B.	<i>Alpena.</i>
May Carpenter,	Ph. B.	12 4-5 <i>Alpena.</i>
Iris Carr,	B. L.	4 <i>Pittsfield.</i>
Lewis Clinton Carson,	A. B.	15 1-5 <i>Detroit.</i>
Mary Ella Carter,	B. L.	5 2-5 <i>Andover, Mass.</i>
Martha Holway Chadbourne,	Ph. B.	6 1-5 <i>Vinton, Ia.</i>
Theodore Lincoln Chadbourne,	B. S.	20 3-5 <i>Vinton, Ia.</i>
Thomas Lincoln Chadbourne, Jr. B. L.		<i>Houghton.</i>
William Stewart Chandler,	B.S.(C.E.)	12 2-5 <i>Coldwater.</i>

Harry Oliver Channon,	B.S.(E.E.)	4 2-5	Quincy, Ill.
Henry Oliver Chapaton,	B. S.		Mt. Clemens.
Glenn Laverne Chapman,	B. L.	12 1-5	Lansing.
William Herbert Charnley,	Ph. B.	7 1-5	Goshen, Ind.
Dwight Bissell Cheever,	B.S.(Mech.E.)	23 2-5	Ann Arbor.
William Sylvester Cheever,	B. L.	6 2-5	Ann Arbor.
Edwin Henry Cheney,	B.S.(E.E.)	10	Detroit.
George Parkhurst Cheney,	B. L.	13 1-5	Aurora, Ill.
Howard Everett Chickering,	B.S.(Mech.E.)	1 3-5	Ann Arbor.
Edward Powell Childs,	B.S.(E.E.)		Granville, O.
Nellie Louise Childs,	B. L.		Ann Arbor.
Clarence Nathan Church,	A. B.		Alma.
James Edward Church, Jr.,	B. S.	7 4-5	Holly.
Albert Loring Clark,	B.S.(Mech.E.)	9 4-5	Ann Arbor.
Ardie Marian Clark,	B.S.(Bio.)	16	Ann Arbor.
Eda May Clark,	B. L.	20	Ann Arbor.
Gertrude Clark,	B. S.		Northville.
Harry Walter Clark,	B.S.(Mech.E.)	1 3-5	Ann Arbor.
Lucy Durfee Clark,	A. B.	17 3-5	Lakeville, N. Y.
Holbrook Gilson Cleaveland,	A. B.	6 2-5	Plymouth, Ind.
Henry Lawrence Cleverdon,	B. S. (C. E.)		Chagrin Falls, O.
George Frank Clukey,	B. L.		Mt. Clemens.
Lucie Ellen Clute,	B. L.	2-5	Ionia.
George Pierre Codd,	A. B.	20 3-5	Detroit.
Edwin Raymond Cole,	B. L.	12 3-5	Watrous ville.
Lawrence Thomas Cole,	A. B.	11 4-5	Ann Arbor.
William Henry Cole,	B. L.	9 1-5	Chicago, Ill.
Fred Welch Colegrove,	Ph. B.		Englewood, Ill.
James Melville Coleman, A. B.,	A. B.	20	Odgensburgh, N. Y.
Geneva College.			
Mary Colver,	B. L.	5 3-5	Sandusky, O.
William Cole Conant,	B.S.(Mech.E.)	7 4-5	Chicago, Ill.
Ettie Blanche Connor,	B. S.	4	West Bay City.
Lola Helen Conrad,	B. S.	5 4-5	Ann Arbor.
Frances Clare Cook,	B. L.		Corunna.
Marguerite Bammel Cook,	B. L.	16 3-5	Ann Arbor.
William Wallace Cook,	A. B.		Irring Park, Ill.
Thomas Benton Cooley,	A. B.	20 3-5	Ann Arbor.
Lucy Coolidge,	Ph. B.	21	Bloomington, Ill.
Jay Ashley Cooper,	B. L.		Fowlerville.
John Corbin, Jr.,	Ph. B.		New Harmony, Ind.
Claude Corbusier,	Ph. B.		Detroit.
Genevieve Cornwell,	B. L.	6	Ann Arbor.

Isabella Cottrell,	B. S.	6 2-5	<i>Flint.</i>
Charles Herbert Covell,	A. B.		<i>Napoleon.</i>
Arthur Howe Covert,	B. S.	10 3-5	<i>Ann Arbor.</i>
Mabel Crabbe,	B. L.	5 3-5	<i>Chicago, Ill.</i>
Alice Doris Cramer,	Ph. B.	8	<i>Ann Arbor.</i>
Katherine Cramer,	Ph. B.	12 2-5	<i>Ann Arbor.</i>
Guy Sherman Crane,	B. L.		<i>Detroit.</i>
Katharine Andrew Crane,	B. L.	1 3-5	<i>La Porte, Ind.</i>
Albert Robinson Crittenden,	B. L.		<i>Frankfort.</i>
James Moseley Crosby,	B.S.(E.E.)	19 2-5	<i>Grand Rapids.</i>
Lawrence Ludger Croze,	B. L.		<i>Houghton.</i>
Galen Greenfield Crozier,	B. S.	2 2-5	<i>Ann Arbor.</i>
Henry LeRoy Crummer,	Ph. B.	4 3-5	<i>Omaha, Neb.</i>
William Ernest Cullen,	A. B.	6 1-5	<i>Helena, Mon.</i>
Alexander Cumming,	B. L.		<i>Oil City, Pa.</i>
Edward Page Cummings,	Ph. B.	4 4-5	<i>Grand Haven.</i>
William John Currer,	B.S.(C.E.)	5	<i>Chicago, Ill.</i>
Heber Doust Curtis,	A. B.	8 4-5	<i>Detroit.</i>
George Sears Curtis,	A. B.	18 2-5	<i>Geneseo, N. Y.</i>
Sylvanus Wright Curtiss, Jr.,	Ph. B.	13	<i>Monroe.</i>
Max Hartranft Cutcheon,	B.S.(E.E.)		<i>Manistee.</i>
Walter Adams Cutler,	A. B.	12 3-5	<i>Ashtabula, O.</i>
George Alfred Damon,	B.S.(E.E.)		<i>Ypsilanti.</i>
Eleazer Darrow,	B.S.(E.E.)	14 3-5	<i>Cincinnati, O.</i>
Alfred Brick Davis, Jr.,	B. L.	2	<i>Gladstone.</i>
Jasper Case Davis,	B.S.(C.E.)	7 1-5	<i>Lansing.</i>
George Lawrence Davison,	B.S.(Chem.)	6 1-5	<i>Joliet, Ill.</i>
Jennie May Davison,	B. L.		<i>Ann Arbor.</i>
Paul Marley Day,	Ph. B.	7 4-5	<i>Detroit.</i>
Elizabeth Whetten Dean,	B. S.	19 3-5	<i>Ann Arbor.</i>
Josiah Dearborn,	A. B.		<i>Effingham, N. H.</i>
Edwin De Bar,	A. B.		<i>Ann Arbor.</i>
Frank Decke,	B. L.	7 3-5	<i>Lansing.</i>
William Hal Decker,	B. S.(Mech.E.)		<i>Davenport, Ia.</i>
Louis Vincent De Foe,	B. L.	21 1-5	<i>Adrian.</i>
William Henry Dellenbeck,	Ph. B.	12 1-5	<i>Hinckley, Ill.</i>
Almon Harry Demrick,	B.S.(E.E.)	1 3-5	<i>Roseville.</i>
Henry Henderson Denham,	B.S.(Chem.)	6 1-5	<i>Flint.</i>
Charles Arza Denison,	B. L.	12 2-5	<i>Decatur, Ill.</i>
Ernest J. Dennen,	A. B.	6 2-5	<i>Ann Arbor.</i>
Grant Alder Dentler,	A. B.		<i>Constantine.</i>
Edward Paul de Pont,	B. S. (Mech. E.)		<i>Ann Arbor.</i>
Clarence Elbert De Puy,	B.S.(Mech.E.)	20 3-5	<i>Jackson.</i>
Alta Isabelle Dewey,	Ph. B.		<i>Alpena.</i>

Samuel Freeland Dibble,	Ph. B.	5 3-5	<i>Ann Arbor.</i>
Mary Cynthia Dickerson,	B. L.	13	<i>Grand Rapids.</i>
Melzar Monroe Dickson,	B.S.(E.E.)	5 3-5	<i>Marshalltown, Ia.</i>
Frank Haigh Dixon,	Ph. B.	16 3-5	<i>Winona, Minn.</i>
Henry Perkins Dodge,	B.S.(Mech.E.)	6 1-5	<i>Toledo, O.</i>
Kate Elizabeth Dopp,	B. L.	8 2-5	<i>Towne, Wis.</i>
Charles Vincent Doran, A. B.,	B.S.(E.E.)	15	<i>Detroit.</i>
Detroit College.			
William Henry Dorrance, Jr.,	B.S.(Mech.E.)	13 1-5	<i>Ann Arbor.</i>
Daniel Layman Dorsey,	A. B.	19	<i>Indianapolis, Ind.</i>
Robert Woodin Doughty,	A. B.	10 4-5	<i>Matteawan, N. Y.</i>
Stephen Arnold Douglas,	B.S.(Mech.E.)	3 1-5	<i>Plain City, O.</i>
Earle Wilbur Dow,	A. B.	16 4-5	<i>Bellefontaine, O.</i>
William Frederick Dowland,	B. S.		<i>Ludington.</i>
Myron La Fayette Downs,	A. B.		<i>South Evanston, Ill.</i>
Charles Drake,	B. S.	5 4-5	<i>Rochester, Ind.</i>
Vivian Surrey Drake,	B. L.		<i>East Saginaw.</i>
Walter Wendell Drew,	A. B.		<i>Grand Rapids.</i>
Genevieve Catherine Duffy,	A. B.	5 2-5	<i>Ann Arbor.</i>
Mary Ellen Duffy,	Ph. B.		<i>Ann Arbor.</i>
John Denison Evarts Duncan,	B.S.(E.E.)	8	<i>Ann Arbor.</i>
Nellie Phoebe Dunham,	B. L.	6 2-5	<i>Monticello, Ia.</i>
Frederick Levy Dunlap,	B.S.(Chem.)	11 2-5	<i>Chillicothe, O.</i>
Augusta Hall Durfee,	A. B.	6 2-5	<i>Detroit.</i>
Irving William Durfee,	Ph. B.	10 4-5	<i>Plymouth.</i>
John Henry Dye,	B.S.(C.E.)		<i>Ann Arbor.</i>
George Burlingame Dygert,	Ph. B.	5 1-5	<i>Ann Arbor.</i>
Hattie Eddy,	B. L.	7	<i>Ann Arbor.</i>
Jennie Eddy,	Ph. B.	7 3-5	<i>Michigan City, Ind.</i>
Martha Florence Eddy,	Ph. B.	13 1-5	<i>Kewanee, Ill.</i>
Edwin Hugh Edwards,	B.S.(Bio.)	13 2-5	<i>Winnebago, Ill.</i>
Hiram Gerard Effinger,	B. S.		<i>Chicago, Ill.</i>
John Robert Effinger, Jr.,	Ph. B.	20	<i>Chicago, Ill.</i>
Bannie Louise Elder,	B. L.	3 3-5	<i>Lansing.</i>
Fannie Mabel Elliott,	Ph. B.		<i>Pontiac.</i>
Hallie C. Ellis, L.L. B.,	B. L.		<i>Freeport, Ill.</i>
Dora Deett Elmer,	A. B.		<i>Mason.</i>
Lily Engelmann,	Ph. B.		<i>Manistee.</i>
Bert George Escott,	B.S.(E.E.)	5	<i>Big Rapids.</i>
Ida Corn Evans,	Ph. B.		<i>Grand Rapids.</i>
Albert Chauncey Eycleshymer,	B.S.(Bio.)	22 4-5	<i>Hastings.</i>
Herman Henry Eymmer,	B.S.(Mech.E.)	3 2-5	<i>East Saginaw.</i>
Eugene Gerald Fassett,	B. S.	13 1-5	<i>Chicago, Ill.</i>
Julius C. Feibel,	Ph. B.		<i>Hillsboro, O.</i>

James Leland Ferguson, □	B.S.(C.E.)	10 3-5	Carson, Ia.
Raymond Marshall Ferguson,	B. L.	2-5	Middleville.
Thomas Henry Ferguson,	B.S.(C.E.)	1 3-5	Detroit.
James Edward Ferris,	Ph. B.	10 2-5	Toledo, O.
Estelle Field,	Ph. B.		Kalamazoo.
Henry George Field,	B. S.	12 4-5	Detroit.
Charles Edmund Filkins,	B. L.	21 2-5	Burton.
Fred Charles Fisher,	B.S.(C.E.)	6 2-5	Lake Linden.
Will John Fisher,	B.S.(E.E.)	8	Pontiac.
George Everett Fitch,	B.S.(Mech.E.)	11	Grand Rapids.
Kenneth Chauncey Fitch,	A. B.		Joliet, Ill.
Ida Bertha Paulina Fleischer,	Ph. B.	11 2-5	Ann Arbor.
Marie Fleming,	A. B.	17	Ann Arbor.
Ralph Tyler Flewelling,	A. B.		St. Louis.
Walter Alexander Forbes,	Ph. B.	5 3-5	Rockford, Ill.
Maude Forhan,	B. L.	14 2-5	East Saginaw.
Ethel Fountain,	Ph. B.	20 3-5	Santa Rosa, Cal.
Herbert Fox,	Ph. B.	11 4-5	La Porte, Ind.
Arthur Frantzen,	B.S.(Mech.E.)	13 3-5	Chicago, Ill.
Hally Frank Frederickson,	A. B.		Chicago, Ill.
George Shepard French, B. S.,	B. L.	16 1-5	Lansing.
Michigan Agricultural College.			
Herbert Ephraim French,	B.S.(C.E.)		Reedsburg, Wis.
Carl Kimball Friedman,	B.S.(C.E.)	16	Detroit.
Henry Arthur Friedman,	Ph. B.	6 2-5	Muskegon.
Isaac Kahn Friedman,	Ph. B.	6 3-5	Chicago, Ill.
Robert Victor Friedman,	Ph. B.	3-5	Muskegon.
Minnie Frost,	Ph. B.	9 4-5	Ann Arbor.
Frederick Sherburne Gaige, M.S.	Ph. B.	20	Ann Arbor.
Hillsdale College.			
Louis Lyon Galbraith,	Ph. B.	5 1-5	Mount Morris, N. Y.
Fanny Agnes Gale,	Ph. B.		Aurora, Ill.
Edgar Owen Galloway,	A. B.	4 4-5	Hillsdale.
Henry Bennett Gammon,	A. B.		Creston, Ill.
Philip Stimson Gardiner,	B.S.(Mech.E.)	7 1-5	Lyons, Ia.
Ralph Stillman Garwood,	A. B.	9 3-5	Ann Arbor.
George Irving Gavett,	B.S.(C.E.)	7 1-5	Sandstone.
Truman Penfield Gaylord,	B.S.(Mech.E.)	6	Shelby.
Vladimir August Geringer,	Ph. B.	8	Chicago, Ill.
Jessie Bertha Gibbes,	B. L.		Ann Arbor.
Ellen Champney Gibson,	A. B.		New Ipswich, N. H.
Frank Rust Gilchrist,	B.S.(C.E.)	8	Alpena.
Hiram North Ernest Gleason,	B.S.(C.E.)	11 3-5	Sherman, N. Y.
James Waterman Glover,	B. L.	10 3-5	East Saginaw.

Jennie Grace Goble,	B. S.	13 4-5	<i>Ann Arbor.</i>
Carlotta Goldstone,	A. B.	6 1-5	<i>East Saginaw.</i>
Mertie Leora Goodell,	Ph. B.	20	<i>Ann Arbor.</i>
Henrietta Isman Goodrich,	B. L.		<i>Grand Rapids.</i>
Willard Clark Gore,	Ph. B.		<i>Chicago, Ill.</i>
Frances Katherine Gould,	B. L.	12 4-5	<i>Chesaning.</i>
Herbert Jay Goulding,	B.S.(Mech.E.)	8	<i>East Saginaw.</i>
Eben Bailey Gower,	Ph. B.	9 4-5	<i>Odell, Ill.</i>
Mary Jeannette Grace,	B. L.	12 2-5	<i>Ann Arbor.</i>
Ida Mary Graham,	B. L.		<i>Oak Park, Ill.</i>
Ralph Krealing Gratigny,	B.S.(Mech.E.)	5 2-5	<i>Cincinnati, O.</i>
Frank Pliny Graves,	A. B.	6 1-5	<i>Grand Rapids.</i>
Bernard Lincoln Green,	B.S.(C.E.)	21 4-5	<i>Washington, D. C.</i>
Frederick Dexter Green,	A. B.	9 4-5	<i>Berlin Falls, N. H.</i>
Myron Perry Green.	B. L.		<i>Charlotte.</i>
Oscar Greulich,	B.S.(C.E.)		<i>Milwaukee, Wis.</i>
William Edgar Griffin,	Ph. B.	20	<i>Wenona, Ill.</i>
Leon Murdock Groesbeck,	B.S.(M.E.)	5 4-5	<i>Kalamazoo.</i>
Sam Bates Grubbs,	A. B.	10	<i>Harrodsburg, Ky.</i>
Albert Arthur Guilbert,	B.S.(E.E.)	3 3-5	<i>Racine, Wis.</i>
Frederick Matthias Gund,	B. L.		<i>Freeport, Ill.</i>
R. Prosper Gustin,	B.S.(E.E.)	7 4-5	<i>Bay City.</i>
Edward Hafer,	B.S.(C.E.)		<i>Cincinnati, O.</i>
Alice Hagerman,	B. L.		<i>Birmingham.</i>
Earl Woodford Hahn,	B. L.	5 3-5	<i>Leslie.</i>
Benjamin Franklin Hall, Jr.,	B. L.	4	<i>Lansing.</i>
Robert Foote Hall,	A. B.		<i>Williamston.</i>
James Clair Hallock,	B.S.(C.E.)	2 3-5	<i>Detroit.</i>
Clemence Hamilton,	A. B.	6 2-5	<i>Bellevue, O.</i>
Gertrude Florence Hamilton,	B. L.	2 2-5	<i>Worden.</i>
Walter Monroe Hamilton,	A. B.		<i>Bucyrus, O.</i>
Walter John Hammill,	B. S.	6 2-5	<i>Rockford, Ill.</i>
John Churchill Hammond,	B.S.(Mech.E.)	1 3-5	<i>South Lyon.</i>
Matthew Brown Hammond,	Ph. B. (U.)		<i>South Bend, Ind</i>
Harrie D. Hamper,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Orville Richard Hardy,	B. S.	20 4-5	<i>Montague.</i>
Charles Jacobson Harmon,	B.S.(E.E.)	1 2-5	<i>Chicago, Ill.</i>
Hubert Pickering Harmon,	B.S.(Mech.E.)	5 3-5	<i>Chicago, Ill.</i>
Enoch Horton Harriman,	B. L.	9	<i>Fenwick.</i>
Norman Taylor Harrington,	B.S.(E.E.)		<i>Chicago, Ill.</i>
James Hugh Harris,	A. B.	16 3-5	<i>Lake Linden.</i>
Samuel Smith Harris,	A. B.	7	<i>Detroit.</i>
Ray Hart,	B.S.(Mech.E.)	4 4-5	<i>Midland.</i>
Howard Davis Haskins,	A. B.	9 2-5	<i>Cincinnati, O.</i>

Myrtie May Haskins,	B. L.	11 1-5	<i>Bronson.</i>
Grace Hastings,	B. S.	20	<i>Sandusky, O.</i>
Alice Emma Hatch,	B. L.	13 2-5	<i>Bay City.</i>
Harry James Hatch,	B.S.(C.E.)	20 1-5	<i>Jackson.</i>
Helen Louise Hatch,	B. L.	21	<i>Bay City.</i>
James Noble Hatch,	B.S.(C.E.)	14 3-5	<i>Vacaville, Cal.</i>
Lena Bernice Haug,	B. S.		<i>Battle Creek.</i>
Horace Walter Hawkins,	B. S.	13	<i>Elgin, Ill.</i>
Clemma Bell Hayes,	A. B.		<i>Erie, Pa.</i>
Leslie Grant Hayes,	A. B.	1 2-5	<i>Los Angeles, Cal.</i>
George Hayler,	B. L.		<i>Ann Arbor.</i>
Walter Edward Healy,	A. B.	19 2-5	<i>Elgin, Ill.</i>
Clarence Wright Heath,	B. L.	5	<i>Benton Harbor.</i>
Susie Heffernan,	Ph. B.	1 2-5	<i>Marquette.</i>
Meyer L. Heidingsfeld,	Ph. B.	7 1-5	<i>Greenfield, O.</i>
James Stanhope Henton,	B.S.(E.E.)	4-5	<i>Sault Ste. Marie.</i>
Julia Herrick,	A. B.	10 4-5	<i>Oak Park, Ill.</i>
Carl William Hertel,	B.S.(E.E.)	11 3-5	<i>Ann Arbor.</i>
Frank Hugh Hess,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Charles Wardell Heywood,	A. B.	13 2-5	<i>Irring Park, Ill.</i>
Ida Z. Hibbard,	B. L.	21 1-5	<i>Detroit.</i>
Maud Hicks,	B. L.	1 3-5	<i>Ann Arbor.</i>
Winifred Ava Higbee,	A. B.	1-5	<i>Buchanan.</i>
George Oswin Higley,	B.S.(Chem.)	19	<i>Gibbon, Neb.</i>
Leonard Fred'k Wm. Hildner,	B.S.(Mech.E.)	6 2-5	<i>Detroit.</i>
Charles Hill,	B. S.	21	<i>Creston, Ill.</i>
John Lewis Hill,	B.S.(C.E.)	12 3-5	<i>Ottawa, Ill.</i>
Achsah Smith Miller,	B. L.		<i>Bay City.</i>
Theodore Henry Hinchman, Jr.,	A. B.	20	<i>Detroit.</i>
William James Hinkson, B. S.,	B.S.(C.E.)	19 3-5	<i>Amadore.</i>
Michigan Agricultural College.			
Mildred Hinsdale,	A. B.	2 2-5	<i>Ann Arbor.</i>
George Steadman Holden,	A. B.		<i>Palmer, Mass.</i>
Ernest Oscar Holland,	B. L.	14 1-5	<i>Money Creek, Minn.</i>
Robert Holland,	Ph. B.	16 1-5	<i>East Saginaw.</i>
Arthur Harold Holmes,	B. L.	10 3-5	<i>Ann Arbor.</i>
Bert Edward Holmes,	B.S.(Mech.E.)	4	<i>Ann Arbor.</i>
Joseph Sabin Hurbert Holmes,	B.S.(E.E.)		<i>Grand Ledge.</i>
Lydia Day Holmes,	Ph. B.	21 3-5	<i>Bay City.</i>
Mabel Edith Holmes,	Ph. B.		<i>Ann Arbor.</i>
Nathaniel Leeson Holmes,	B.S.(E.E.)		<i>Coldwater.</i>
Alfred William Hookway,	B.S.(E.E.)	6 4-5	<i>Grass Lake.</i>
Kate Almira Hopper,	B. L.	3 3-5	<i>Detroit.</i>
Jesse Burroughs Hornung,	A. B.	4	<i>Ann Arbor.</i>

John Elston Hosmer,	A. B.	2 3-5	<i>Marshfield, Mo.</i>
Charles Edwin Houghton,	B.S.(Mech.E.)	4-5	<i>Grand Rapids..</i>
Sarah May Howard,	Ph. B.		<i>Chicago, Ill.</i>
Hiram Howden,	B.S.(Mech.E.)	8	<i>Silver Springs, N. Y.</i>
Carrie Eleanor Howe,	Ph. B.		<i>Big Rapids.</i>
Frank William Howe,	A. B.	3 1-5	<i>Ann Arbor.</i>
Charles Arthur Howell,	B.S.(M.E.)	23 3-5	<i>Detroit.</i>
George Erasmus Howes, Jr.,	B. L.	4	<i>Battle Creek.</i>
John Bernard Hoy,	B. L.		<i>Lockport, Ill.</i>
John T. Noye Hoyt,	B.S.(C.E.)	19 3-5	<i>Grand Rapids.</i>
Arthur Lucius Hubbard,	A. B.		<i>South Bend, Ind.</i>
William Frank Hubbard,	A. B.	19 4-5	<i>Monroe.</i>
Clarence William Hubbell,	B.S.(C.E.)	5 2-5	<i>Manistee.</i>
Ettie Louise Hulbert,	Ph. B.	6 4-5	<i>Morgan Park, Ill.</i>
Melburn Walter Hull,	B.S.(Mech.E.)	10 4-5	<i>Saline.</i>
Florence Humphrey,	Ph. B.	2 3-5	<i>Lansing.</i>
Alfred Hatch Hunt,	A. B.		<i>Grand Rapids.</i>
Helen Grace Hunter,	B. L.		<i>Jackson.</i>
Will Hunter,	A. B.		<i>Mechanicsburg, O.</i>
Ernest Washburn Hurd,	B.S.(E.E.)	5 4-5	<i>Ann Arbor.</i>
John Stanley Hurd,	A. B.	6 2-5	<i>Detroit.</i>
William Wallace Hurd,	Ph. B.		<i>Pine Run.</i>
Frank Simpson Hutchinson,	B.S.(M.E.)	3 3-5	<i>Rochester, N. Y.</i>
Lewis Hutchinson,	A. B.	3 4-5	<i>Des Moines, Ia.</i>
Marion Tower Hyatt,	B. L.		<i>Flint.</i>
Kate Viola Ilgenfritz,	Ph. B.	12 4-5	<i>Monroe.</i>
George Ingersoll,	Ph. B.		<i>Marshall.</i>
Samuel Cameron Irwin,	B.S.(Mech.E.)		<i>Belleue, Pa.</i>
Harriet Eliza Ives,	Ph. B.		<i>Coldwater.</i>
Valentine Seamon Ives,	B.S.(C.E.)	5 3-5	<i>Detroit.</i>
Mary Josephine Jackson,	A. B.	6	<i>Ionis.</i>
John Alexander Jameson, Jr.,	A. B.	20 1-5	<i>Chicago, Ill.</i>
Leroy Lansing Janes, Jr.,	Ph. B.		<i>Ann Arbor.</i>
Lois Harriet Janes,	Ph. B.		<i>Ann Arbor.</i>
Frederic E. Janette,	B. L.	5 1-5	<i>Owosso.</i>
Mary Adelaide Jay,	A. B.	17 4-5	<i>Ann Arbor.</i>
Albert Ernest Jenks,	B. L.		<i>Ionis.</i>
Stillman George Jenks,	B.S.(Chem.)	18 2-5	<i>Ionis.</i>
Herbert Spencer Jennings,	B. S.	6 3-5	<i>Tonica, Ill.</i>
Timothy Jerome,	B.S.(E.E.)		<i>Saginaw.</i>
Harry Fayette Johnson,	B.S.(C.E.)		<i>Ludington.</i>
Lillie Wyckoff Johnson,	A. B.	17 2-5	<i>Memphis, Tenn.</i>
John Black Johnston,	A. B.		<i>Belle Centre, O.</i>
William Minto Johnstone,	B.S.(Mech.E.)	13 2-5	<i>Chicago, Ill.</i>

Carroll Dunham Jones,	B.S.(Mech.E.)	6 1-5	<i>Ann Arbor.</i>
Robert Emmons Jones,	A. B.		<i>Webster City, Ia.</i>
Walter Scott Jones,	B.S.(C.E.)	5 4-5	<i>Castleton, Vt.</i>
Wm. Alfred Livingstone Jones,	B.S.(C.E.)		<i>Ann Arbor.</i>
Benjamin Franklin Kastl,	B.S.(E.E.)		<i>Detroit.</i>
Taka Kawada,	Ph. B.		<i>Tokio, Japan.</i>
John Albert Keating,	Ph. B.	3-5	<i>Muskegon.</i>
William Thaddeus Keating,	A.B.B.S.(C.E.)	20	<i>Elgin, Ill.</i>
St. Ignatius College.			
Lyman Frederic Kebler,	Ph. C., B. S.	24 2-5	<i>Ann Arbor.</i>
Fred Lockwood Keeler,	B.S.(C.E.)	4	<i>Grass Lake.</i>
Frank Herman Keller,	B.S.(Chem.)		<i>Indianapolis, Ind.</i>
Mary Eleanor Kelly,	Ph. B.		<i>Chicago, Ill.</i>
William Byron Kelly,	B. L.	19 1-5	<i>Yenia, O.</i>
Fred Charles Kent,	B. S.	6	<i>Ann Arbor.</i>
Walter James Kent,	B. S.	6 1-5	<i>Ann Arbor.</i>
Thomas Kerl,	A. B.	19	<i>Oakland, Neb.</i>
John Pease Keyes,	Ph. B.	22 1-5	<i>Winona, Minn.</i>
William Alfred Kickland,	B. S.	16 3-5	<i>Stanton.</i>
Edna Alexine King,	A. B.	19	<i>Ann Arbor.</i>
Ella Wickes King,	A. B.	13 4-5	<i>Breckenridge.</i>
Harry Edwin King,	B. L.	20 1-5	<i>Ann Arbor.</i>
Harry Rufus King,	B.S.(Mech.E.)	3 1-5	<i>Adrian.</i>
Helen Beecher King,	Ph. B.	1-5	<i>Flint.</i>
Samuel Denton Kinne,	A. B.	3	<i>Ann Arbor.</i>
Walter Hermann Kirk,	A. B.		<i>Peoria, Ill.</i>
Carrie Emma Kirtland,	Ph. B.		<i>Ann Arbor.</i>
Gustav Kleene,	A. B.	20 1-5	<i>Peoria, Ill.</i>
Abraham Lincoln Knisely,	B. S.	22	<i>Benton Harbor.</i>
Barend Herman Kroeze,	A. B.		<i>Grand Rapids.</i>
Herman Bertram Krogmann,	Ph. B.	3-5	<i>Saginaw.</i>
Day Krolik,	Ph. B.	17 4-5	<i>Detroit.</i>
Mary Ernestine Krolik,	Ph. B.	17 1-5	<i>Detroit.</i>
Franz Christian Kuhn,	B. S.	6 1-5	<i>Mt. Clemens.</i>
Adoniram Judson Ladd,	A. B.		<i>Ann Arbor.</i>
John Donald Lamont,	B.S.(C.E.)	5 4-5	<i>Lake Linden.</i>
Robert Patterson Lamont,	B.S.(C.E.)	20 2-5	<i>Detroit.</i>
Ruth Winifred Lane,	A. B.	18 4-5	<i>Detroit.</i>
William Beekman Larrabee,	B.S.(Mech.E.)	13 4-5	<i>Detroit.</i>
Rufus Gillett Lathrop,	A. B.	6 2-5	<i>Detroit.</i>
Lou Ella LaTourette,	B. L.		<i>Fenton.</i>
Albert Hume Lawrence,	B.S.(Bio.)		<i>Los Gatos, Cal.</i>
George Alfred Lawrence,	B.S.(Bio.)		<i>Los Gatos, Cal.</i>
Agnes May Leas,	B. L.	12 1-5	<i>Ann Arbor.</i>

Harry William Le Clear,	B. L.		<i>Jackson.</i>
Edna Lemley,	B. L.	3	<i>Quincy, Ill.</i>
Alfred Courtney Lewerenz,	A. B.	16	<i>Detroit.</i>
Bertha Amelia Lewis,	Ph. B.		<i>Jackson.</i>
Edward Robert Lewis,	B. L.	20 2-5	<i>Jackson.</i>
Nathan Edward Lewis, B. S.,	B.S.(C.E.)	15 1-5	<i>Washington Heights,</i> <i>Ill.</i>
Kansas State Agricultural College.			
Warren Harmon Lewis,	B.S.(Mech.E.)		<i>Oak Park, Ill.</i>
Max Lichtenstein,	B.S.(C.E.)	2 2-5	<i>Chicago, Ill.</i>
Frank Waterman Lightner,	Ph. B.	11	<i>Detroit.</i>
Neva Line,	Ph. B.		<i>La Porte, Ind.</i>
Isaac Bernard Lipson,	B. L.		<i>Leavenworth, Kan.</i>
Dale Livingstone,	A. B.	1 4-5	<i>Detroit.</i>
Jacob William Loeb,	Ph. B.		<i>Chicago, Ill.</i>
John Cooper Loomis,	Ph. B.	4 3-5	<i>Tiffin, O.</i>
Harriet Anges Lovell,	A. B.	20 2-5	<i>Flint.</i>
Jacob Lowenhaupt,	B. L.	20 1-5	<i>Mt. Vernon, Ind.</i>
James Barnett Lowry, A. B.,	B.S.(Chem.)	18	<i>Lynnville, Tenn.</i>
Cumberland University.			
Waldemar Traugott Lunger-			
shausen,	B.S.(Chem.)		<i>Mt. Clemens.</i>
Arthur Lussky,	B.S.(E.E.)	1 3-5	<i>Chicago, Ill.</i>
Daniel Benjamin Luten,	B.S.(C.E.)		<i>Grand Rapids.</i>
Alva Eden Lyon,	B.S.(C.E.)		<i>Ann Arbor.</i>
Cora Elizabeth Lyon,	B. L.	6	<i>Dexter.</i>
Daniel Franklin Lyons,	B. L.	1 3-5	<i>Fenton.</i>
William John Le Hunte Lyster,	Ph. B.	12 1-5	<i>Detroit.</i>
Walter Lee Maas,	A. B.		<i>Negaunee.</i>
Ralph Stewart Mac Pherran,	B. S.	14 1-5	<i>Sterling, Ill.</i>
Grant Mahan,	B. L.	17 3-5	<i>Mt. Morris, Ill.</i>
Herbert Gerald Manly,	B.S.(Mech.E.)		<i>Ann Arbor.</i>
Frank Addison Manny,	A. B.		<i>Michigan City, Ind.</i>
Wilfred Hamilton Manwarren,	B.S.(E.E.)	7 4-5	<i>Grayling.</i>
Willard Lorraine Maris, B. S.,	B. S.	20 3-5	<i>West Chester, Pa.</i>
Swarthmore College.			
Florence Maud Marsh,	A. B.		<i>Lewiston, N. Y.</i>
Alfred Cookman Marshall,	B.S.(E.E.)	5 3-5	<i>Detroit.</i>
Walter Park Martindale,	Ph. B.		<i>Fulton, Ill.</i>
Edward Luther Mason,	Ph. B.	5 3-5	<i>Corunna.</i>
Sheridan Francis Mason,	B. L.		<i>Chicago, Ill.</i>
Frank Farquhar Matheson,	Ph. B.		<i>Grand Rapids.</i>
Thomas Knight Mathewson,	B.O.(C.E.)		<i>Muscatine, Ia.</i>
Harry Allen Mattison,	Ph. B.		<i>Ionia.</i>
Edward Gottlieb Maul,	B. S.	14	<i>Kewanee, Ill.</i>
Meyer Sinn May,	Ph. B.		<i>Grand Rapids.</i>

David Porter Mayhew,	Ph. B.	7 2-5	<i>Detroit.</i>
Joseph Lynn McAllister,	Ph. B.	19 1-5	<i>Sinclairville, N. Y.</i>
Harry Ernest McClumpha,	B.S.(M.E.)		<i>Plymouth.</i>
Archibald McCracken,	A. B.	6	<i>Birmingham.</i>
Edward James McCreedy,	B.S.(Mech.E.)		<i>Mt. Clemens.</i>
Fred James McElwee,	Ph. B.	12	<i>Big Rapids.</i>
Hugh Farber McGaughey,	B. S.	6	<i>Winona, Minn.</i>
George Thomas McGee,	B.S.(C.E.)	14 1-5	<i>Jackson.</i>
Harrison Beecher McGraw,	A. B.	20 3-5	<i>Cleveland, O.</i>
Maude McGregor.	A. B.	10 2-5	<i>Pontiac.</i>
John Raymond McGurren,	B. L.		<i>Chicago, Ill.</i>
Jessie Maude McIntyre,	Ph. B.		<i>Knoxville, Tenn.</i>
William John McKnight, A. B.,	A. B.	20	<i>Beaver Falls, Ia.</i>
Geneva College.			
William Henry McLauchlan,	Ph. B.		<i>Chicago, Ill.</i>
John Aloysius McLaughlin,	B. L.	18 3-5	<i>Muskegon.</i>
David Williams McMorran,	B.S.	13 2-5	<i>Port Huron.</i>
Isabella McRae,	Ph. B.	6	<i>Alpena.</i>
Amelia Elizabeth McSweeney,	A. B.	16 3-5	<i>Kalamazoo.</i>
Clarence Linton Meader,	A. B.	14 3-5	<i>Battle Creek.</i>
Clara Marie Meiser,	Ph. B.	19 4-5	<i>Detroit.</i>
Newton D. Mereness,	A. B.	13 2-5	<i>Sharon, Wis.</i>
William Henry Merner,	A. B.	8 2-5	<i>Cedar Falls, Ia.</i>
Gertrude Emily Merrell,	B. L.	6	<i>Birmingham.</i>
Joseph Francis Merrill,	B. S.	4 4-5	<i>Richmond, Utah.</i>
Richard Dwight Merritt,	B. L.	13	<i>Saginaw.</i>
Maud Elizabeth Merritt,	B. S.	5 4-5	<i>Battle Creek.</i>
Nettie Victoria Metcalf,	B. L.		<i>Detroit.</i>
Samuel Alex. Sterrett Metheny, A. B.,	A. B.	20	<i>Mersine, Turkey.</i>
Geneva College.			
Ida Mighell,	Ph. B.	20 3-5	<i>Aurora, Ill.</i>
Lee Ezekiel Mighell,	B. L.	12 1-5	<i>Aurora, Ill.</i>
Dwight Miller,	B. L.		<i>Greenfield, O.</i>
George Henry Miller,	B.S.(E.E.)	6 4-5	<i>Marshall.</i>
Harry Miller,	B.S.(Mech.E.)	3 4-5	<i>Ann Arbor.</i>
Jennie Maud Miller,	Ph. B.	20 3-5	<i>Kalamazoo.</i>
Joseph Leggett Miller,	B. S.	7 1-5	<i>Kewanee, Ill.</i>
Wilhelm Miller,	A. B.	13 1-5	<i>Detroit.</i>
William Smith Miller,	Ph. B.	5 2-5	<i>Rockford, Ill.</i>
Rose Edith Mills,	Ph. B.		<i>Ann Arbor.</i>
Karl Roswell Miner,	B.S.(C.E.)	5 4-5	<i>Ann Arbor.</i>
Carl Franklin Moore,	B.S.(E.E.)		<i>Marquette.</i>
Jesse Cameron Moore,	Ph. B.		<i>Delphi, Ind.</i>
Reuben Rice Moore,	A. B.	19 3-5	<i>St. Clair.</i>

Dwight Cadogan Morgan,	B.S.(C.E.)	2	<i>Dwight, Ill.</i>
Martin Morris,	B.S.(C.E.)	5 4-5	<i>Coloma, Ind.</i>
Frank Marion Morrison,	A. B.	13 2-5	<i>Castine, O.</i>
Jacob Worley Morrison,	A. B.	13 2-5	<i>Castine, O.</i>
Edgar Martin Morsman, Jr.,	Ph. B.	4 4-5	<i>Omaha, Neb.</i>
Joseph Jenry Morsman,	B.S.(C.E.)	6 2-5	<i>Omaha, Neb.</i>
Frank Yandell Moseley,	B. S.	2 2-5	<i>Kansas City, Mo.</i>
Edith Irene Moser,	B. L.	10 4-5	<i>Charlotte.</i>
Julius Moses,	Ph. B.	5 4-5	<i>Chicago, Ill.</i>
Bertrand Paul Mossman,	Ph. B.	20	<i>Fort Wayne, Ind.</i>
George Fred Mulliken,	A. B.	12 2-5	<i>Detroit.</i>
Harry Burritt Mulliken,	B.S.(Mech.E.)	1 4-5	<i>Detroit.</i>
Albert Charles Muma,	B.S.(E.E.)	12 2-5	<i>Ann Arbor.</i>
Ida May Muma,	A. B.	8	<i>Ann Arbor.</i>
Loyal Levi Munn, Jr.,	A. B.	18 2-5	<i>Freeport, Ill.</i>
Edward Joseph Murphy, A. B.,	B.S.(C.E.)	20	<i>Chicago, Ill.</i>
St. Ignatius College.			
Williams Robbins Murray,	Ph. B.	13	<i>Marquette.</i>
Frank Wesley Nagler,	B. S.	17 3-5	<i>Freeport.</i>
George Willis Nattinger,	B.S.(C.E.)		<i>Lyons, Ia.</i>
William Lyman Neff,	B.S.(Mech.E.)	7 4-5	<i>Flint.</i>
Joseph Raleigh Nelson,	B. S.		<i>Ann Arbor.</i>
Cyrenius Adelbert Newcomb, Jr.,	B. S.	6 1-5	<i>Detroit.</i>
William Wilmon Newcomb,	B.S.(Bio.)	3 4-5	<i>Detroit.</i>
Adnah Clifton Newell,	B.S.(Mech.E.)	11 4-5	<i>Grand Rapids.</i>
Frederick Whittlesey Newton,	A.-B.	1-5	<i>East Saginaw.</i>
Edward Crampton Nichols,	B. S.	12 1-5	<i>Maywood, Ill.</i>
Vernon Elmer Nichols,	B. L.	6 2-5	<i>Greenville.</i>
Walter Hammond Nichols,	B.S.(Chem.)	18 4-5	<i>Salt Lake City, Utah.</i>
Elbert Nicholson,	B.S.(E.E.)	9	<i>Kalamazoo.</i>
Frederick Charles Noble,	B.S.(C.E.)	3 1-5	<i>Memphis, Tenn.</i>
Ruth Amelia Noble,	A.-B.		<i>Rice Lake, Wis.</i>
Flora Oakley,	A.-B.	18 1-5	<i>Ann Arbor.</i>
Sara Genevieve O'Brien,	B. L.		<i>Ann Arbor.</i>
Robert Louis Odom,	B. L.		<i>Kokomo, Ind.</i>
Edith May Orr,	B. S.	6	<i>Manistique.</i>
Loran David Osborn,	A. B.	16 2-5	<i>Grand Rapids.</i>
Samuel Osborn,	B. S.	6 4-5	<i>Manchester.</i>
Frederick Leigh Osenburg,	B. L.		<i>Ann Arbor.</i>
Elmer James Ottaway,	B. S.		<i>Ann Arbor.</i>
James Bertram Overton,	B. L.	2	<i>Detroit.</i>
Orville Hugh Packer,	B.S.(M.E.)		<i>Hartford.</i>
Edna Littlefield Paddock,	B. L.		<i>Coldwater.</i>
Lola Silence Paddock,	B. L.	6 4-5	<i>Coldwater.</i>

Benjamin Eldridge Page,	A. B.	18 4-5	<i>Ann Arbor.</i>
David King Paige,	B.S.(Mech.E.)		<i>New York, N. Y.</i>
Robert Kendrick Palmer,	B.S.(C.E.)		<i>Geneva, N. Y.</i>
Walter Truman Palmer,	A. B.	16 4-5	<i>Port Allegany, Pa.</i>
Hugo Pam,	Ph. B.	12 3-5	<i>Chicago, Ill.</i>
Samuel Culver Park,	A. B.		<i>Salt Lake City, Utah.</i>
Nellie Parker,	Ph. B.		<i>Owosso.</i>
William Pool Parker,	B.S.(C.E.)	6 1-5	<i>Owosso.</i>
Richard Sumner Parmly,	A. B.	15 1-5	<i>Chicago, Ill.</i>
Samuel Pleasants Parmly, Jr.,	B.S.(E.E.)	8 3-5	<i>Chicago, Ill.</i>
William Collins Parsal,	B. L.		<i>Benton Harbor.</i>
Harry Hemphill Parsons,	B. L.		<i>Missoula, Mon.</i>
Maude Parsons,	A. B.	7 2-5	<i>Saginaw.</i>
Marion Patton,	A. B.		<i>Quincy, Ill.</i>
Alvick Alfonso Pearson,	Ph. B.	3-5	<i>West Milton, O.</i>
Eleanor Brooks Pearson,	A. B.	20	<i>South Sudbury, Mass.</i>
George Wilcox Peavy,	B. L.		<i>Howell.</i>
Ferdinand Spalding Peck,	B. L.	5 3-5	<i>Chicago, Ill.</i>
Herbert Edmund Peckham,	A. B.	6 2-5	<i>Providence, R. I.</i>
Jessica Vaughn Penny,	A. B.	8 2-5	<i>Ann Arbor.</i>
Carl Dio Perry,	A. B.	13 1-5	<i>Elk Creek, N. Y.</i>
Stuart Hoffman Perry,	A. B.	3-5	<i>Pontiac.</i>
Earle Clifford Peters,	Ph. B.	6 2-5	<i>Columbus, O.</i>
John Arthur Peters,	A. B.	12	<i>Flat Rock.</i>
Edith Ellen Pettee,	B.S.(Bio.)	6 1-5	<i>Detroit.</i>
Gustavus Adolphus Pfeiffer,	B. L.		<i>Cedar Falls, Ia.</i>
Jessie Phelps,	B. S.		<i>Pontiac.</i>
Carlin Philips,	B. S.		<i>Kenton, O.</i>
Nellie Genevieve Phillips,	Ph. B.	19 4-5	<i>Ann Arbor.</i>
Adrian John Pieters,	B.S.(Bio.)	4 1-5	<i>Holland.</i>
William David Plant,	A. B.	19	<i>Minneapolis, Minn.</i>
Lewellyn Sherrill Pomeroy,	B.S.(C.E.)	9 2-5	<i>Kalamazoo.</i>
Florence Harriett Pope,	Ph. B.	6 1-5	<i>Allegan.</i>
Byron Cleveland Porter,	Ph. B.	6	<i>Oak Park, Ill.</i>
Frederic Sherman Porter,	A. B.	9 3-5	<i>Cleveland, O.</i>
Minott Eugene Porter,	B.S.(C.E.)	8 1-5	<i>West Richfield, O.</i>
Fred Hogeboom Potter,	B.S.(C.E.)		<i>Saginaw.</i>
Ralph Arthur Powell,	B.S.(E.E.)	1 3-5	<i>Marshall.</i>
Mary Fairman Power,	Ph. B.	7 4-5	<i>Detroit.</i>
Almira Ann Prentice,	Ph. B.		<i>Kalamazoo.</i>
George Griffin Prentis,	B. L.	13 1-5	<i>Detroit.</i>
Bertha Edna Pritchard,	Ph. B.	17 1-5	<i>Allegan.</i>
Mae Henrietta Purmort,	A. B.		<i>Saginaw.</i>
William Charles Quarles,	Ph. B.	12 1-5	<i>Milwaukee, Wis.</i>

Richard Quinn,	B.S.(C.E.)		<i>Chicago, Ill.</i>
Dan Lace Quirk, Jr.,	Ph. B.	5 2-5	<i>Ypsilanti.</i>
Harrison McAllester Randall,	Ph. B.	6 1-5	<i>Ann Arbor.</i>
Louise Fitz Randolph,	A. B.	16 4-5	<i>Toledo, O.</i>
Alfred Day Rathbone, Jr.,	A. B.	11 2-5	<i>Grand Rapids.</i>
Georgie Adams Rathbone,	Ph. B.	8	<i>Ann Arbor.</i>
John Adams Rathbone,	B.S.(E.E.)		<i>Ann Arbor.</i>
George Robert Ray, Jr.,	B.S.(C.E.)	11	<i>Manistee.</i>
Howard Monroe Raymond,	B.S.(Mech.E.)	5 3-5	<i>Gross Lake.</i>
Carrie Estella Read,	B. S.		<i>Ann Arbor.</i>
Will Reardon, Jr.,	A. B.	5 2-5	<i>Midland.</i>
George Rebec,	Ph. B.	20	<i>Saginaw.</i>
Russell Potter Reeder,	B.S.(E.E.)		<i>Cincinnati, O.</i>
Henry Frederick Lewis Reichle,	A. B.	7 2-5	<i>East Saginaw.</i>
Edward Snover Reid,	B.S.(Mech.E.)	5 4-5	<i>Vassar.</i>
Robert Minard Reid,	A. B.	19 1-5	<i>Salem, Ind.</i>
Helen Annetta Rice,	B. L.	14 3-5	<i>Chicago, Ill.</i>
Herbert Louis Rice,	B.S.(C.E.)	13 3-5	<i>Chicago, Ill.</i>
Albert Dykeman Rich,	Ph. B.	18 2-5	<i>Chicago, Ill.</i>
Emma Gertrude Richardson,	Ph. B.		<i>Caro.</i>
Hedley Vicars Richardson,	Ph. B.	6 2-5	<i>Detroit.</i>
Frederic Stephen Richmond,	B.S.(E.E.)	19 4-5	<i>Ann Arbor.</i>
Charles Walter Ricketts,	A. B.		<i>Ashmore, Ill.</i>
Maria Emma Ridley,	Ph. B.	11 2-5	<i>Grinnell, Ia.</i>
Albert Bishop Robbins,	B. L.		<i>Kansas City, Mo.</i>
Josephine Louise Roberts,	A. B.	5 4-5	<i>La Salle, Ill.</i>
Roscoe Linscott Roberts,	B. S.	14 1-5	<i>Jefferson, Ill.</i>
Eugene Herbert Robertson,	Ph. B.	22 2-5	<i>Ogden Centre.</i>
James Robertson,	B. S.	19	<i>Dayton, Wash.</i>
Opal Robeson,	Ph. B.	20 2-5	<i>Arcanum, O.</i>
Benjamin Clapp Robinson,	B. L.		<i>Grand Rapids.</i>
Charles Andrew Robinson,	Ph. B.		<i>Muskegon.</i>
Pearl Osborne Robinson,	B. L.	6 2-5	<i>Plain City, O.</i>
Hugh Rodman,	B.S.(Mech.E.)	6 1-5	<i>Frankfort, Ky.</i>
Emma Winner Rogers,	B. L.	(U.)	<i>Ann Arbor.</i>
Fred Rogers,	B.S.(E.E.)	2 1-5	<i>Grand Rapids.</i>
Oscar Romel,	B.S.(C.E.)		<i>Michigan City, Ind.</i>
Carlton Raymond Rose,	Ph. B.		<i>Ann Arbor.</i>
Edwin John Rosencrans,	B.S.(C.E.)	5 4-5	<i>Chebanse, Ill.</i>
William Henry Rosencrans,	B.S.(C.E.)		<i>Chebanse, Ill.</i>
James Archibald Ross,	B. S.		<i>Perrysburg, O.</i>
Katharine Bradley Ross,	B. S.	6 1-5	<i>Terre Haute, Ind.</i>
Pete Whitcome Ross,	A. B.	13 2-5	<i>Mason, O.</i>
George Herbert Rowe,	B.S.(E.E.)	19 4-5	<i>Fort Wayne, Ind.</i>

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Richard Frederick Rust,	A. B.	3 3-5	<i>Ann Arbor.</i>
Horton Casparis Ryan,	B. L.	4 4-5	<i>Washington, D. C.</i>
Robert Lemuel Sackett,	B.S.(C.E.)	21 3-5	<i>Mt. Clemens.</i>
Homer Erwin Safford,	Ph. B.	12 4-5	<i>Plymouth.</i>
Kate Sagendorph,	B. L.	9 3-5	<i>Jackson.</i>
Fred Anson Sager,	B.S.(E.E.)		<i>Belvidere, Ill.</i>
Nobusabro Sakurai,	B.S.(C.E.)		<i>Tokio, Japan.</i>
George Whiting Sanborn,	Ph. B.	12 2-5	<i>St. Clair.</i>
Mary Eliza Sanborn,	Ph. B.	18 4-5	<i>Port Huron.</i>
Edmond Lindsay Sanderson,	A. B.	9 2-5	<i>Detroit.</i>
Henry Edward Sauer,	B. S.		<i>Chicago, Ill.</i>
James Harvey Sawyer,	B.S.(C.E.)	1 3-5	<i>Ludington.</i>
Carl Schlenker,	A. B.	13 1-5	<i>Toledo, O.</i>
Julius Otto Schlotterbeck, Ph. C.,	B.S.(Chem.)	22	<i>Ann Arbor.</i>
Harry Garr Schock,	A. B.		<i>South Bend, Ind.</i>
Bertha Barbara Sciurus,	B. L.	6 2-5	<i>Saginaw.</i>
Alfred William Scobey,	B. L.	10 1-5	<i>Kankakee, Ill.</i>
Lora Scudamore,	B. L.		<i>Lakeport, Cal.</i>
Frederick Lyle Searing,	A. B.		<i>Mankato, Minn.</i>
Lewis Grover Seeley,	Ph. B.		<i>Caro.</i>
Annie Rose Seely,	B. L.	7 1-5	<i>Coldwater.</i>
Bernard Benjamin Selling,	Ph. B.	1 2-5	<i>Detroit.</i>
Henry Mortimer Senter,	B. L.		<i>Houghton.</i>
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Herbert Bradish Shoemaker,	A. B.	19 4-5	<i>Ann Arbor.</i>
Ella Gertrude Shorb,	Ph. B.	8	<i>Decatur, Ill.</i>
Darius Parsons Shuler, Ph. C.,	B.S.(Chem.)	25 3-5	<i>Ypsilanti.</i>
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Ada Louise Skinner,	B. L.	6 2-5	<i>Battle Creek.</i>
Walter Fulton Slocum,	Ph. B.	15 1-5	<i>Chicago, Ill.</i>
Agnes Hannay Smith,	A. B.		<i>Tremont, Ill.</i>
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Sophronia Leland Stevens,	A. B.	15 4-5	<i>Ann Arbor.</i>
Irene Stewart,	A. B.	4-5	<i>Peoria, Ill.</i>
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Lucien Sterling Taylor,	B. L.	14	<i>Ann Arbor.</i>
William Willard Taylor,	B.S.(M.E.)	6 1-5	<i>Ann Arbor.</i>
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Rufus Calvin Thayer,	Ph. B.	19	<i>Northville.</i>
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Charles Ladd Thomas,	Ph. B.	4 1-5	<i>Omaha, Neb.</i>
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Gale Thompson,	B. L.	3 1-5	<i>Chicago, Ill.</i>
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Albert Willis Tressler,	A. B. 100	15 4-5	<i>Montpelier, O.</i>
Samuel Mumford Trevellick,	Ph. B.	12 4-5	<i>Detroit.</i>
Lyman Benjamin Trumbull,	Ph. B.	20 3-5	<i>Sandstone.</i>
William Hall Turnbull,	A. B.	20 1-5	<i>Detroit.</i>
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Paul John Ullrich,	B. S.	13 1-5	<i>Mt. Clemens.</i>
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Anna Marie Van Housen,	Ph. B.	4 2-5	<i>Ann Arbor.</i>
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James Van Inwagen, Jr.,	B. L.	12 2-5	<i>Chicago, Ill.</i>
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Lillie Mae Volland,	B. L.		<i>Ann Arbor.</i>
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Henry Hammersley Walker,	A. B.	6 2-5	<i>Ann Arbor.</i>
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Winfred James Wallace,	B. L.	1 3-5	<i>Ypsilanti.</i>
William Edwin Walter,	A. B.	13 2-5	<i>Sandusky, O.</i>
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Carl Cleghorn Warden,	Ph. B.	12 1-5	<i>Ann Arbor.</i>
Edward Dodge Warner,	B. L.	20 1-5	<i>Jackson.</i>
Charles Beecher Warren,	Ph. B.	18 3-5	<i>Lansing.</i>
Cyrus Carleton Warren,	Ph. B.	7 3-5	<i>Hinsdale, Ill.</i>
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Eugene Clarence Warriner,	A. B.	19 3-5	<i>Paw Paw, Ill.</i>
Ella May Washburn,	A. B.	6 2-5	<i>Saginaw.</i>
Esther Martha Waters,	B. L.	1 3-5	<i>La Porte, Ind.</i>
Edward Lacy Watrous,	B. L.	5 3-5	<i>Des Moines, Ia.</i>
Marion Isabel Watrous,	B. L.	19	<i>Des Moines, Ia.</i>
Carrie May Watson,	B. S.	10 4-5	<i>Ann Arbor.</i>
George Cabot Weare,	B.S.(Mech.E.)		<i>Chicago, Ill.</i>
Joseph Weare,	B.S.(C.E.)		<i>Chicago, Ill.</i>
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William Erastus Wheeler, Jr.,	B. L.		<i>Edwardsville, Ill.</i>
Benjamin Riddle Whipple,	A. B.	12 4-5	<i>Port Huron.</i>
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Frank Bates Whipple,	A. B.	13 2-5	<i>Port Huron.</i>
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Lee Waldron White,	B. L.	5 1-5	<i>Sturgis.</i>
Marion Ballantyne White,	Ph. B.	5 3-5	<i>Peoria, Ill.</i>

Louis Grant Whitehead,	A. B.	6 2-5	<i>Vulcan.</i>
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Edwin Conklin Wilkinson,	Ph. B.	6 1-5	<i>Marquette.</i>
Thomas Lee Wilkinson,	B.S.(Mech.E.)	25	<i>Davenport, Ia.</i>
Howe Allen Williams,	A. B.		<i>Ann Arbor.</i>
Lee Clarkson Williams,	B.S.(E.E.)		<i>Quincy, Ill.</i>
Lulu Helen Williams,	Ph. B.	6	<i>Allegan.</i>
Neil Hooker Williams,	B.S.(E.E.)	6	<i>Clinton.</i>
Viola May Williams,	Ph. B.	12 2-5	<i>Ann Arbor.</i>
Cora May Willsey,	A. B.	1-5	<i>Ann Arbor.</i>
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William Henry Wilson,	B.S.(Bio.)	4 3-5	<i>Ann Arbor.</i>
Edward Clark Winans,	B.S.(Mech.E.)	5 2-5	<i>Benton Harbor.</i>
Frank Arner Windes,	A. B.	2	<i>Winnetka, Ill.</i>
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Homer Wilson Wyckoff,	B.S.(E.E.)		<i>Detroit.</i>
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Adolph A. Zimmerman,	B.S.(Mech.E.)	6 2-5	<i>Helena, Mon.</i>
Mary Zimmerman,	Ph. B.	6	<i>Cairo, Ill.</i>

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Howard Benjamin Beecher,	<i>Ann Arbor.</i>
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James Griswold Blunt,	<i>Ann Arbor.</i>
Fannie Bolton,	<i>Battle Creek.</i>
James Anthony Bordeaux,	<i>Butte City, Mon.</i>
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Hattie Lucinda Bradley,	<i>Battle Creek.</i>
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Warren Pierpont,	<i>Owosso.</i>
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George Campbell Rew,	<i>Chicago, Ill.</i>

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James Meade Atkinson,	<i>Warren, O.</i>
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William Herman Bell,	<i>Bellevue, O.</i>
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Battle Creek.
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East Akron, O.

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* Died March 4, 1891.

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Frederick Curtenius Wetmore, LL. B.,	<i>Ann Arbor.</i>

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Herman Solomon Hepner,
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Virgil Isaac Hixson,
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 Muskegon.
 Three Oaks.
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 Monmouth, Ia.
 Yokohoma, Japan.
 St. Paul, Neb.
 St. John, N. B.

 Park City, Utah.
 Detroit.
 Monmouth, Ill.

 Mayville.
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 Traverse City.
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Mechanicstown, Md.

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Wilson David Lett,	<i>Waldron.</i>
Milton Elisha Lewis,	<i>Lincoln, Neb.</i>
Ira Allen Lieghey,	<i>Massillon, O.</i>
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Fayette University.

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 Joseph Elder Peeler,
 Newton Henry Peer,
 John Alphonso Pellett,
 John Wesley Pennington,
 Pierce Jeremiah Phelan,
 Howard Phillips,
 Frank Milton Pierce,
 William Monroe Pindell,
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Menlo, Ia.
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Rising Sun, Ind.
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Holden, Mo.
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Tottori Ken, Japan.
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Roodhouse, Ill.
Findlay, O.
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Axtell, Kan.
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Arthur Henry Seymour,	<i>Ann Arbor.</i>
Guy Shank,	<i>Tacoma, Wash.</i>
Walter La Forest Shank,	<i>Red Oak, Ia.</i>
Peter Sharpe,	<i>Caledonia, N. Dak.</i>
Ralph Martin Shaw,	<i>Lexington, Ky.</i>
Fred Arthur Sheldon,	<i>Vernon.</i>
Elmer Ellsworth Shields,	<i>Centralia, Wash.</i>
Albert Phillips Simpson,	<i>Belleue, Ia.</i>
Howard Jay Slagle,	<i>Oregon, Ill.</i>
Horatio Buck Smith,	<i>Hopkinton, Ia.</i>
Hyrum Alma Smith,	<i>Salt Lake City, Utah.</i>
Leon Albert Smith,	<i>Battle Creek.</i>
Perry Smith, Jr.,	<i>Zanesville, O.</i>
William Andrew Smith,	<i>St. Johns.</i>
Shirley Edward Spence,	<i>Knoxville, Tenn.</i>
Jesse DeWitt Spitzer,	<i>Elgin, Ill.</i>
Victor D. Sprague,	<i>Vermontville.</i>
Samuel White Stewart,	<i>Draper, Utah.</i>
Ralph Stone, A. B.,	<i>Wilmington, Del.</i>
Swarthmore College.	
D. Storms,	<i>Plainwell.</i>
John Jones Street,	<i>Denver, Col.</i>
Edward Albert Strickler,	<i>Brighton.</i>
Patrick William Sullivan,	<i>Kewanee, Ill.</i>
George Andrew Sutherland,	<i>Oil Springs, Ont.</i>
Arthur Edgar Sweet,	<i>Flushing.</i>
Harold Taylor,	<i>Indianapolis, Ind.</i>
Robert Foster Thompson,	<i>Canandaigua, N. Y.</i>

Willard Dawson Thompson,
 Harry Montford Tichnor,
 Samuel Treby,
 Charles Ott Trimble,
 Frank Pierce Tscharner,
 William Arthur Turner,
 Boynton Holcomb VanDerveer,
 John Henry Walker,
 Scovel Shapley Walker,
 John Gough Wall,
 Neil Richard Walsh,
 Clarence G. Washburn,
 John C. Waters,
 Joseph Fred Webb,
 Daniel Weber,
 Arthur Webster,
 Francis Joseph Welch,
 Clarence William Wells,
 Frank Maury Wells,
 Frank Lewis Welshimer,
 Alvin Fernando Wentworth,
 Robert Cochran Wertz,
 John D. White,
 James Harvey Whitely,
 Edwin John Wilber,
 George Bruce Wilson,
 William Luther Winn,
 Benjamin Bourdette Wood,
 Henry Lester Wood,
 Herbert Leonard Woodworth,
 Charles William Wright,
 Daniel Wright Yancey,
 John O. Yates,
 William E. Young,
 Charles Henry Zuttermeister,

Salt Lake City, Utah.
Jacksonville, Ill.
Burt.
Kansas City, Mo.
Okawville, Ill.
Carthage, Mo.
Hamilton, O.
Lemont, Ill.
Tecumseh.
Harrisburg, Pa.
New Lothrop.
Greenwich, O.
Topeka, Kan.
Pittsfield.
Millburg.
Carthage, Mo.
Shamokin, Pa.
Owensboro, Ky.
Portland, Ore.
Churubusco, Ind.
Long Island, N. H.
Dalton, O.
Clinton, Mo.
St. Cloud, Pa.
Woodlawn Park, Ill.
Seattle, Wash.
White Hall, Ill.
Bellevue, O.
Sheffield, Ill.
Kearney, Neb.
Springdale, Ark.
Jackson.
Ironton, O.
Mt. Hope, O.
Chicago, Ill.

SPECIAL STUDENTS.

NAME.
 Herbert H. Cowen,
 Will Guin Crabill,
 Edward Alexander Cress,
 John Quincy Adams Crosby,
 Osmond Ellingson,
 Louie Frederick Fishback,

RESIDENCE.
Virden, Ill.
South Bend, Ind.
St. Paul, Neb.
Cedar Falls, Ia.
Webster City, Ia.
Fort Smith, Ark.

Willis Kingsley Gillette,
William James Just,
George Abiathar Kendall,
Edward James McGurrin,
Julius K. Patek,
Abram Bunn Ross,
William Jesse Whitaker,

Rochester, N. Y.
Ann Arbor.
Damascus, Me.
Grand Rapids.
Crystal Falls.
Philadelphia, Pa.
Terre Haute, Ind.

The following students, enrolled in the Department of Literature, Science, and the Arts, also pursue studies in the Department of Law.

John Robert Effinger, Jr.,
Jacob Lowenhaupt,
Harrison Beecher McGraw,
Herbert Bradish Shoemaker,
John Arthur Van Arsdale,
William Wilhartz,

Chicago, Ill.
Mt. Vernon, Ind.
Cleveland, O.
Ann Arbor.
Ann Arbor.
Chicago, Ill.

School of Pharmacy.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

ALBERT B. PRESCOTT, PH. D., M. D.,

DEAN.

WILLIAM H. PETTEE, A. M.,

VICTOR C. VAUGHAN, PH. D., M. D.,

VOLNEY M. SPALDING, A. B.,

OTIS C. JOHNSON, PH. C., A. M.,

ALVISO B. STEVENS, PH. C.,

SECRETARY.

FREDERICK C. NEWCOMBE, B. S.

Other Instructors and Assistants.

JULIUS O. SCHLOTTERBECK, PH. C.,

JOHN D. RIKER, B. S., M. D.,

MOSES GOMBERG, B. S.,

CHRISTIAN G. JENTER, PH. C.,

BERNHARD C. HESSE, PH. C.

STUDENTS.

RESIDENT GRADUATE.

NAME.

Harry Kahn, Ph. G.,

Illinois College of Pharmacy.

RESIDENCE.

Peru, Ind.

SECOND YEAR STUDENTS.

NAME.

Arthur Winfield Adams,

Shinichi Ando,

William Fuller Ashley,

William Royal Bacon,

Robert M. Berry,

RESIDENCE.

Chesaning.

Tokio, Japan.

Medina, O.

Sault Ste. Marie.

Huntington, Ind.

Harry Lamont Bird,	<i>Highland.</i>
Frederic Hathaway Borradaile, LL. B.,	<i>Paso del Norte, Mex.</i>
Perry Briggs,	<i>Eureka, Ill.</i>
Homer Burgess,	<i>Cambridge, O.</i>
Arthur Campbell,	<i>Crystal Falls.</i>
Joseph Edward Carmody,	<i>Watercliet.</i>
Fred Newton Chapel,	<i>Grand Blanc.</i>
Alfred Payson Churchill,	<i>Cleveland, O.</i>
John Ward Corbin,	<i>Little Rock, Ark.</i>
Frank Frederick Davis,	<i>Washington, D. C.</i>
Edith Emma Greaves,	<i>Dayton, O.</i>
Joseph Clement Hearne,	<i>Lexington, Ky.</i>
John E. Hitchcock,	<i>Harrisville, N. Y.</i>
John Loren Hubbard,	<i>Waterloo.</i>
Frank Pomfret Husted,	<i>Albany, N. Y.</i>
Edward Morse Kennedy,	<i>Sturgis.</i>
Joseph Catlin King,	<i>Ithaca, N. Y.</i>
Harry Cross Loudenbeck,	<i>Marengo, Ill.</i>
Thomas Henry McGee,	<i>Farmington.</i>
Frank Hugh McGrath,	<i>Toledo, O.</i>
Benjamin Lindley Murray,	<i>Ypsilanti.</i>
Annie Agnes Oliver,	<i>Onawa, Ia.</i>
Frank J. Peck	<i>Warren, O.</i>
Dorian Melancthon Russell,	<i>Sturgis.</i>
Walter Karl Schmidt,	<i>Grand Rapids.</i>
Frank Irving Shepherd,	<i>Kyles, O.</i>
Henry Fred Smith,	<i>Elyria, O.</i>
Henry Persse Snow,	<i>Le Roy, N. Y.</i>
Garrie Green Van Schoonhoven,	<i>Salt Lake City, Utah.</i>
James Wheeler Whitney,	<i>Bethel, Conn.</i>

FIRST YEAR STUDENTS.

NAME.	RESIDENCE.
Harris Edson Allen, B. S.,	<i>Morenci.</i>
Fayette College.	
Daniel Webster Atwood,	<i>Zanesville, O.</i>
Harry William Birkmier,	<i>Ottawa, O.</i>
Charles Henry Bostick,	<i>Manton.</i>
Walter William Brand,	<i>Toledo, O.</i>
Walter Washington Brayshaw,	<i>Peoria, Ill.</i>
Clyde Stanley Bugbee,	<i>Morrice.</i>
Walter Briggs Cady,	<i>Ypsilanti.</i>
Philip Martin Cantieny,	<i>Lima, O.</i>
Rudolph Benton Carssow,	<i>Ste. Genevieve, Mo.</i>
Bert Eugene Cody,	<i>Indianapolis, Ind.</i>

Amasa Day Cook,
 Thomas Gomar Davis, Jr.,
 Thomas John Doughty,
 Fred Thomas Drake,
 Adolph Ernest Dryer,
 Sidney Erwin,
 Richard Fischer,
 Wert Volin Fitch,
 Grant George Gardner,
 Edward Albert Grochau,
 Elliott Hafley Haag,
 Leonard G. Hall,
 Mary Katharine Heard,
 Herman Franklin Hoch,
 Elijah Mark Houghton,
 Phil Garry Hower,
 George Richard Jackson, A. B.,
 Oberlin College.

Victor Juhler,
 Will Andrew Kelly,
 Julius Martin Kleinn,
 Alfred Ernest Landers,
 Joseph Lohrstorfer,
 John Charles Maxwell,
 Fred Christy McCombs,
 Charles William Merkel,
 David Gregg Metheny,
 Herman Fred Miller,
 Arthur Jesse Morse,
 Delia O'Connor,
 Jay Ostrander,
 James Harry Parsons,
 George Henry Pattison,
 Oscar Charles Pusch,
 Thomas Edwin Robinson,
 Leonard Adam Seltzer,
 John T. Sheedy,
 Oscar H. Soetje,
 John Bird Sutton,
 Rollin Spurgeon Tidrick,
 Chikanori Tomohira,
 George Jones Warner,
 John Austin Warner,
 Joseph Jerome Wells,
 Charles Williams,

Warren, O.
 Youngstown, O.
 Matteawan, N. Y.
 Rochester, Ind.
 Port Huron.
 Scio.
 New Ulm, Minn.
 Fitchburg.
 Okemos.
 Duluth, Minn.
 Napoleon, O.
 Ann Arbor.
 North East, Pa.
 Mendon.
 Theresa, N. Y.
 Sandusky, O.
 Detroit.

Pomeroy, O.
 Ottawa, O.
 Chelsea.
 Fredonia, N. Y.
 Port Huron.
 Decatur.
 Lowellville, O.
 Charlotte.
 Pittsburgh, Pa.
 Ann Arbor.
 Calumet.
 Lapeer.
 West Bay City.
 Detroit.
 Grand Crossing, Ill.
 Marysville, Kan.
 Charlotte.
 Joliet, Ill.
 Worcester, Mass.
 Monticello, Ia.
 Hunter's Creek.
 Brighthurst, Ind.
 Tokio, Japan.
 Birmingham.
 Woodland.
 Athens.
 Woodland.

Homœopathic Medical College.

FACULTY.

JAMES B. ANGELL, LL. D.,

PRESIDENT.

HENRY L. OBETZ, M. D.,

DEAN.

JAMES C. WOOD, M. D.,

DANIEL A. McLACHLAN, M. D.,

SECRETARY.

CHARLES GATCHELL, M. D.,

CHARLES S. MACK, A. B., M. D.

Other Instructors and Assistants.

ERNEST A. CLARK, M. D.,

ANDREW B. NELLES, M. D.,

MARY DENISON, M. D.

STUDENTS.

RESIDENT GRADUATE.

NAME.	RESIDENCE.
Julia Stringham Baright, M. D., Hahnemann Medical College.	<i>Ann Arbor.</i>

THIRD YEAR STUDENTS.

NAME.	RESIDENCE.
Arza Van Avery,	<i>Springport.</i>
Sara Howard Bostwick,	<i>Lyons, N. Y.</i>
Philip Horton Bourne,	<i>Dunkirk, N. Y.</i>
Arthur Wordsworth Burdick,	<i>Oakland, Cal.</i>
William Franklin Dean B. S., State University of Iowa.	<i>Independence, Ia.</i>
Harvey Elmer Flint,	<i>Erie, Pa.</i>
Bina Jane Hallock,	<i>Ann Arbor.</i>
John Howard Harvey,	<i>Bellefonte, Pa.</i>

Charles William Kirtland,
 Emma Klein,
 Franklin Frees Lehman, A. B.,
 James W. Losee,
 Myron Alanson Patterson,
 Rebecca Williams Rogers,
 Orlando Leon Sutherland,
 Frank Scott Tuthill,
 Mary Emma Van Schoonhoven,
 Guert Elmer Wilder,

Rochester, Ind.
Detroit.
Madisonburg, O.
Pontiac.
Holly.
Pendleton, Ind.
Three Oaks.
Liberty.
Salt Lake City, Utah.
Chautauqua, N. Y.

SECOND YEAR STUDENTS.

NAME.
 Herbert Edwin Baright,
 Charles William Behm,
 John Campbell Buell,
 Nelson Hoyt Chamberlain,
 William Whittelsey Cheney, A. B.,
 University of Minnesota.

*Frank Eugene Dickinson,
 Annie Bissell Dillon,
 Frank Wilmot French,
 Ernest Frank Gamble,
 Lewis Bradstreet Gardner,
 Charles Earnest Giddings,
 Joseph Clifford Harder,
 Jennie Hughes,
 Monroe Manges, A. B.,
 Wooster University.

Francis V. Martin,
 Elmer Douglass Osmun,
 Fred Johnson Peck,
 Charles Dwight Pullen,
 Anna Barrington Taylor,
 Essington Tracy Trimmer,
 Ida Clerke Woolsey,

RESIDENCE.
Battle Creek.
Grand Haven.
Hanover.
Sonora, Cal.
Minneapolis, Minn.

Dubuque, Ia.
Pittsburgh, Pa.
Otsego.
Tecumseh.
Rochester, N. Y.
Madison, Wis.
North Newberg.
St. Thomas, Ont.
Wooster, O.

Three Oaks.
Pontiac.
Ansonia, Conn.
Otsego.
Toledo, O.
Vicksburg.
Toledo, O.

FIRST YEAR STUDENTS.

NAME.
 Luzenia Elizabeth Beckwith,
 Roy Leighton Bentley,
 Ernest C. Brown,
 George Frederic Clark, Jr.,
 Nora May Dakin,

RESIDENCE.
Batavia, N. Y.
Ionia.
Dexter.
Aylmer, Ont.
Dansville.

* Deceased.

Mabel Geneva Dixey,
Frank Henderson Doud,
Edward Charles Dreher,
Cyrus George Everett,
Elman Parker Felch,
Silas Frankhauser,
Andrew Magee Harvey, B. S.,

Knox College.

Clifford Reeder Hervey,
Francis Leslie Hoffman,
John Louis Ireland,
John Mark Kellogg,
Andrew Krümling,
Fred Charles Krümling,
Frederick Clifton Laur,
Harriet Leah McPherson,
Fannie Eliza Nieberg,
Henry Martyn Northam,
Mary Elizabeth O'Brien,
Alpheus Luther Pollard,
Issie Sharring Powers,
Oscar Luman Ramsdell,
Frank Rich,
Charles Kimball Stewart,
Cyrus Milton Thurston,
Harry Howard Wilford,
Harvey George Young,

Fremont, O.
Victory, N. Y.
Tamaqua, Pa.
Harrison.
Grand Rapids.
Hillsdale.
Charlotte.

Granville, O.
Nashville.
Rochester, N. Y.
Charlotte.
Ann Arbor.
Ann Arbor.
Aylmer, Ont.
Adrian.
St. Mary's, O.
Meadville, Pa.
Kalamazoo.
Anamosa, Ia.
Grand Rapids.
South Westerlo, N. Y.
Chicago, Ill.
Lexington.
Three Oaks.
Tamaqua, Pa.
Pioneer, O.

College of Dental Surgery.

FACULTY.

JAMES. B. ANGELL, LL. D.,

PRESIDENT.

CORYDON L. FORD, M. D., LL. D.,

JONATHAN TAFT, M. D., D. D. S.,

DEAN.

JOHN A. WATLING, D. D. S.,

WILLIAM H. DORRANCE, D. D. S.,

NELVILLE S. HOFF, D. D. S.,

JAMES N. MARTIN, PH. M., M. D.

Assistant

LOUIS P. HALL, D. D. S.,

STUDENTS.

SENIORS.

NAME.

Walter Horace Booth,
James Frank Cook,
Manuel Vicente del Valle,
Rokus Christian Devries,
Arthur Aaron Deyoe,
Frank Chester Dorrance,
Charles Henry Edwards,
Frederick William Fleming,
Walter Jesse Green,
Frank Sydney Henry,
William Edward Kearns,
Gordon Grant McCoy,
Austin McGuire,
Clinton Floyd Metcalf,
Reuben Wallace Miller,
Arthur Werner Mueller,

RESIDENCE.

Ann Arbor.
Toledo, O.
San Juan, Porto Rico.
Holland.
St. Clair.
Ann Arbor.
Ypsilanti.
Cedar Rapids, Ia.
Battle Creek.
Jacksonville, Fla.
Ann Arbor.
Vnn Wert, O.
Ann Arbor.
Washington, D. C.
Urania.
Milwaukee, Wis.

Pascal Pratt Nelson,
 Charles Sigfried Rudolph Osius,
 Michael Moore Park,
 Wilsie David Reed,
 Clinton Robert Scott,
 Alfred Louis Sickler,
 Charles Perce Stone,
 Jonathan Ray Taft,
 Lewis Carlisle Thayer,
 Victor Emmanuel Tuttle,
 Eldon Waterloo,
 Lucy Kate Waterloo,
 William Williams, M. D.,
 Western Reserve University.
 Burt G. Winans,

Ann Arbor.
Detroit.
Fair Ground, Ont.
Manchester.
Vicksburg.
Detroit.
Ann Arbor.
Cincinnati, O.
Farmington.
Ann Arbor.
Smith's Creek.
St. Clair.
Oswestry, England.
Ann Arbor.

JUNIORS.

NAME.
 Burt Abell,
 Samuel Howard Arthur,
 Harry Howard Avery,
 Frank Irvin Ball,
 Harry Park Ball,
 Walter Joel Bell,
 Charles Lee Blunt,
 Herbert Warren Bovee,
 Charles Edward Burchfield,
 William John Bush,
 Charles Sylvester Chadwick,
 Timothy Childs,
 Archibald Warren Diack,
 George Dilworth,
 William Haidle,
 Henry James Harvey,
 Thomas Ebenezer Howson,
 Osgood Frank Ingalls,
 Vida Annette Latham,
 Ben Hubbard Lee,
 Frank P. Martin,
 Henry Milling,
 John Albert Moore,
 William James Mummery,
 Frank S. Prettyman,
 Frank Kimball Proctor,
 Ellen Denison Searle,

RESIDENCE.
Ann Arbor.
East Saginaw.
Howell.
Fremont, O.
Albion.
Ann Arbor.
Ann Arbor.
Clayton.
Ann Arbor.
Ann Arbor.
Chelsea.
Warrensburg, Ill.
Detroit.
Dilworth, Mon.
Deerfield.
Sibley, Ia.
Teeswater, Ont.
Ann Arbor.
Manchester, England.
Irving.
Decatur, Ill.
Westport, Ireland.
Defiance, O.
Ann Arbor.
Ann Arbor.
Hillsdale.
Berkshire, O.

Edward Douglas Slawson,
Joseph Allen Snyder,
Edward Bartlett Spalding,
Carrie Marston Stewart,
George Ernest Tribby,
Anthony VanKammen,
Austin Smith Watrous,
May Weston,

Bay City.
Athens.
Sault Ste. Marie.
Ann Arbor.
Mentor, O.
Grand Rapids.
Flint.
Kewanee, Ill.

FRESHMEN.

NAME.	RESIDENCE.
Charles William Adamson,	<i>Boston, Mass.</i>
Alexander Robert Allen,	<i>Ann Arbor.</i>
Arthur William Ball,	<i>Ann Arbor.</i>
Frank Walter Boyer,	<i>Wadsworth, O.</i>
Gaylor Monroe Brown,	<i>Big Rapids.</i>
Herbert John Burke,	<i>Ann Arbor.</i>
Ferdinand John Henry Bush,	<i>San Francisco, Cal</i>
Charles Arthur Church,	<i>Port Huron.</i>
John Ray Clancy,	<i>Ann Arbor.</i>
William Jesse Clark,	<i>McMinnville, Ore.</i>
Gerald Willard Collins,	<i>Elk Point, S. Dak.</i>
William Arthur Conlan,	<i>Chelsea.</i>
John Angell Cook,	<i>Ypsilanti.</i>
John Jay Cook,	<i>Traverse City.</i>
Milton James Cobb,	<i>Allegan.</i>
G. Otis De Urfae,	<i>Painesville, O.</i>
Calvin Elwood,	<i>Pontiac.</i>
Harry Devillon Geiger,	<i>Springport.</i>
Alburtus Christian VanRaalte Gilmore,	<i>Holland.</i>
Eugene Milton Graves,	<i>Sheridan, Ore.</i>
James Grey,	<i>Port Huron.</i>
Charles Augustus Hawley,	<i>Avery, O.</i>
Marcellus Grant Hillman,	<i>Fenton.</i>
Will Smith Hinckley,	<i>Paw Paw.</i>
Frank S. James,	<i>Hudson.</i>
Richard David Jones,	<i>Hancock.</i>
John William Kasbeer,	<i>Kasbeer, Ill.</i>
Herman Kreit,	<i>Detroit.</i>
Frederick John Howard Leland,	<i>St. Johns.</i>
Arthur Frederick Leuty,	<i>Port Hope.</i>
Gideon E. Lewis,	<i>Faribault, Minn.</i>
George Blakely Little,	<i>Davenport, Ia.</i>
Edward Ballard Lodge,	<i>Cuyahoga Falls, O.</i>
Jimmy Monroe Lowry,	<i>Lake City.</i>

George Hudson Mann,
John Archie McAlister, Jr.,
Robert Duncan McBride,
William McFarlane,
Gerald Gower McKellops,
Jesse James McMullen,
Thomas Byrns Mercer,
Charles Lester Mitchell,
Walter Samuel Moore,
Mason Moyer,
Francis Henry Mulholland,
Kaufman L. Myers,
Harry Brunswick Nase,
Ethelwyn Phillips,
Fred M. Prettyman,
Weston Andrew Vallean Price,
Greenbury Albert Rawlings,
John George Schindler,
Frank Edward Seybolt,
*Fred Emery Spencer,
John Francis Spring,
Milton Russell Stimson,
Harvey Arthur Sturdevant,
Burt Sidney Sutherland,
Frank Lewis Sutherland,
Sherman Hartwell Swift,
John Hoffman Van den Berg,
Will Hamilton Van Deman,
William Henry Van Iderstine,
Milton Tate Watson,
Will Lloyd Webster,
Henry Dudley Wilber,
Vernon Anderson Williams,

Ann Arbor.
Logan City, Utah.
Birmingham.
Nairn, Ont.
St. Louis, Mo.
Fairfield, Ia.
Wausau, Wis.
Miamisburg, O.
Ann Arbor.
Elkhart, Ind.
Manitowoc, Wis.
Elkhart, Ind.
St. John, N. B.
Wigan, England.
Ann Arbor.
Newburgh, Ont.
Sterling, N. Dak.
Bay City.
Scio.
Dowagiac.
Roseburg.
Ann Arbor.
Walden, Col.
Ann Arbor.
Ann Arbor.
Edinboro, Pa.
Grand Haven.
Washington Court House, O.
Marquette.
Jackson.
Norwalk, O.
East Constable, N. Y.
Cloverdale, Cal

*Deceased.

ADDENDUM.

The following name should be inserted in the Catalogue of Resident Graduates in the Department of Literature, Science, and the Arts.

NAME.

Marietta Kies, Ph. M.,

RESIDENCE.

Danielsonville, Conn.

ERRATA.

Page 15, line 7, for Glen P. Swiggett, read Glen L. Swiggett.

Page 19, line 8 from bottom, for pamphlets, read pamphlets.

Page 213, line 21, for *Boulder, Cal*, read *Boulder, Col*.

Summary of Students.

Department of Literature, Science, and the Arts.

HOLDER OF THE ELISHA JONES CLASSICAL FELLOWSHIP...	1
RESIDENT GRADUATES.....	42
*CANDIDATES FOR AN ADVANCED DEGREE, ENROLLED IN OTHER DEPARTMENTS.....	5
GRADUATES STUDYING <i>in absentia</i>	47
CANDIDATES FOR A BACHELOR'S DEGREE.....	912
STUDENTS NOT CANDIDATES FOR A DEGREE.....	168 — 1175

Department of Medicine and Surgery.

RESIDENT GRADUATES.....	4
FOURTH YEAR STUDENTS.....	108
THIRD YEAR STUDENTS.....	139
SECOND YEAR STUDENTS.....	50
FIRST YEAR STUDENTS.....	74 — 375

Department of Law.

RESIDENT GRADUATES.....	15
SENIORS	270
JUNIORS	283
SPECIAL STUDENTS.....	13
*STUDENTS ENROLLED IN DEPARTMENT OF LITERATURE, SCIENCE, AND THE ARTS.....	6 — 587

School of Pharmacy.

RESIDENT GRADUATE.....	1
SECOND YEAR STUDENTS.....	35
FIRST YEAR STUDENTS.....	55 — 91

Carried up.....	2228
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*Included in *Summary by States* on page 248 only in the Department in which they are enrolled.

SUMMARY OF STUDENTS.

247

Brought up..... 2228

Homœopathic Medical College.

RESIDENT GRADUATE.....	1
THIRD YEAR STUDENTS.....	18
SECOND YEAR STUDENTS.....	21
FIRST YEAR STUDENTS.....	31 — 71

College of Dental Surgery.

SENIORS	30
JUNIORS	35
FRESHMEN.....	67 — 132

2431

Deduct for names counted twice..... 11

Total 2420

SUMMARY BY STATES

AND BY DEPARTMENTS.

STATE OR COUNTRY.	Department of Literature, Science, and the Arts.	Department of Medicine and Surgery.	Department of Law.	School of Pharmacy.	Homoeopathic Medical College.	College of Dental Surgery.	Total.
Michigan.....	667	179	165	38	34	79	1162
Illinois.....	193	14	65	5	1	4	282
Ohio.....	74	33	57	19	8	14	205
Indiana.....	50	18	36	5	2	2	113
Pennsylvania.....	15	20	40	2	6	1	84
New York.....	28	27	13	7	8	1	84
Iowa.....	30	10	26	2	3	4	75
Missouri.....	6	5	18	1		1	31
California.....	8	6	12		2	2	30
Minnesota.....	12	5	7	2	1	1	28
Wisconsin.....	10	8	5		1	3	27
Kansas.....	5	3	17	1			26
Nebraska.....	9		15				24
Utah.....	7	1	11	1	1	1	22
Colorado.....	6	2	12			1	21
Kentucky.....	3	3	9	1			16
Massachusetts.....	6	5	1	1		1	14
Washington.....	1		10				11
Montana.....	5		3			1	9
Tennessee.....	6		3				9
Oregon.....		2	4			2	8
District of Columbia.....	5			1		1	7
New Hampshire.....	3	2	2				7
Arkansas.....	1	1	2	1			5
Connecticut.....	1	2		1	1		5
South Dakota.....	2		2			1	5
Vermont.....	2	2	1				5
Idaho.....		1	3				4
Maine.....	3		1				4
North Dakota.....			3			1	4
Texas.....			4				4
West Virginia.....		1	3				4
Delaware.....	1		2				3
Georgia.....	1		2				3
New Jersey.....	1	1					2
Mississippi.....	1		1				2
North Carolina.....	1	1					2
Virginia.....			2				2
Florida.....						1	1
Indian Territory.....			1				1
Maryland.....			1				1
Rhode Island.....	1						1
Ontario.....	1	17	12		3	4	37
Japan.....	4	1	8	2			15
England.....						3	3
New Brunswick.....			2			1	3
Porto Rico.....		1				1	2
Bulgaria.....		1					1
Costa Rica.....		1					1
Ireland.....						1	1
Mexico.....				1			1
Sweden.....		1					1
Syria.....		1					1
Turkey.....	1						1
Total.....	1170	375	581	91	71	132	2420

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